Maintenance and Service Guide

Compaq Presario 5400 Series Computers - 5446, 5452, 5456, 5471, 5473, 5474, 5475, 5476, 5477

Product Description

Troubleshooting

Illustrated Parts Catalog

Removal & Replacement Procedures

Jumper & Switch Information

Specifications

See the Notice for copyright and trademark information, and the Preface for symbol conventions and Technician Notes.

Download ZIP file of complete MSG to hard drive.

This MSG will be periodically maintained and updated as needed.
To report a technical problem, contact your Regional Support Center or IM Help Center.
For content comments or questions, contact the Editor.

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Online Maintenance and Service Guide
Compaq Presario 5400 Series Personal Computers

September 1999

PREFACE

This *Maintenance and Service Guide* is a troubleshooting guide that can be used for reference when servicing the Compaq Presario 5400 Series Personal Computers.

Compaq Computer Corporation reserves the right to make changes to the Compaq Presario 5400 Series Personal Computers without notice.

Symbols

The following words and symbols mark special messages throughout this guide.

	WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.
NC	**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of data.
IMPORTANT:	Text set off in this manner presents clarifying information or specific instructions.
NOTE:	Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes

	WARNING: Only authorized technicians trained by Compaq should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, the user should not attempt to make repairs at the component level or to make modifications to any printed circuit board. Improper repairs can create a safety hazard. Any indications of component replacement or printed circuit board modifications may void any warranty.

Serial Number

When requesting information or ordering spare parts, the computer serial number should be provided to Compaq. The serial number can be found on the front right side of the chassis (between the CD/DVD/Zip drives and the drive door hinge), and on the rear of the computer above the power supply.

SHOW ME

Locating Additional Information

The following documentation is available to support this product:

- Compaq Presario documentation set
- *Introducing Windows 98 Guide*
- Service Training Guides
- Compaq Service Advisories and Bulletins
- *Compaq QuickFind*
- *Compaq Service Quick Reference Guide*
- *Compaq Help Center*

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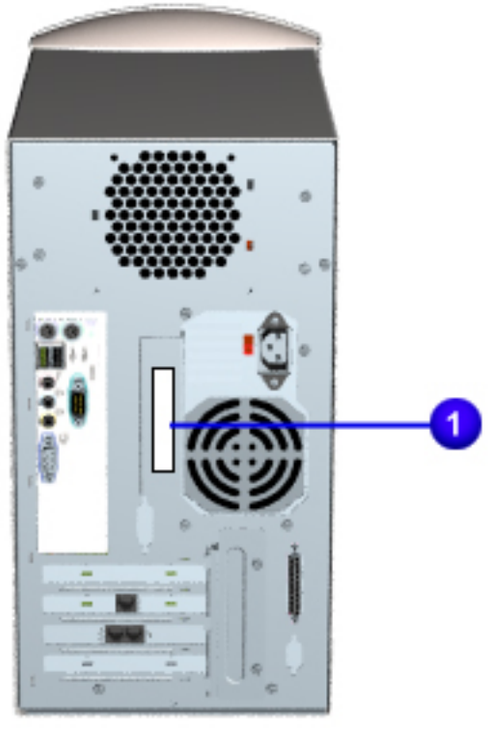
REMOVAL & REPLACEMENT PROCEDURES

Serial Number

The computer serial number should be provided to Compaq whenever requesting information or ordering spare parts. The serial number (1) is located on the rear of the computer above the power supply, and also on the cover next to the bezel.



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Before You Begin

- Electrostatic discharge
- Service considerations
- Preparation for disassembly

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REMOVAL & REPLACEMENT

Electrostatic Discharge

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not be affected at all and will work perfectly throughout a normal cycle. Or it may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.

Generating Static

The table below shows the different amounts of static electricity generated by different activities .

	Relative Humidity		
Event	**10%**	**40%**	**55%**
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tubes	2,000 V	700 V	400 V
Removing DIPS from vinyl trays	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCBs	26,000 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

NOTE: 700 volts can degrade a product!

Preventing Electrostatic Damage to Equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following proper packaging and grounding precautions are necessary to prevent damage:

- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Use transporters and conveyors made of antistatic belts and metal roller bushings. Mechanized equipment used for moving materials must be wired to ground and proper materials selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Preventing Damage to Drives

To prevent static damage to hard drives, use the following precautions:

- Handle drives gently, using static-guarding techniques.
- Store drives in the original shipping containers.
- Avoid dropping drives from any height onto any surface.
- Handle drives on surfaces that have at least one inch of shock-proof foam.
- Always place drives PCB assembly side down on the foam.

Grounding Methods

The method for grounding must include a wrist strap or a foot strap at a grounded workstation. When seated, wear a wrist strap connected to a grounded system. When standing, use footstraps and a grounded floor mat.

Static-Shielding Protection Levels			
Method	Antistatic Plastic	Carbon-Loaded Plastic	Metallized Laminate
Voltages	1,500	7,500	15,000

Grounding Workstations

To prevent static damage at the workstation, use the following precautions:

- Cover the workstation with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- Use static-dissipative mats, heel straps, or air ionizers to give added protection.
- Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting and removing connectors or test equipment.
- Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
- Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.
- Use a portable field service kit with a static dissipative vinyl pouch that folds out of a work mat. Also use a wrist strap and a ground cord for the work surface. Ground the cord to the chassis of the equipment undergoing test or repair.

Grounding Equipment

Use the following equipment to prevent static electricity damage to the equipment:

Wrist Straps are flexible straps with a minimum of 1 megohm ±10% resistance to the ground cords. To provide proper ground, a strap must be worn snug against the skin. On grounded mats without banana-plug connectors, connect a wrist strap with alligator clips.

Heelstraps/Toestraps/Bootstraps can be used at standing workstations and are compatible with most types of boots and shoes. On conductive floors or dissipative floor mats, use them on both feet with a minimum of 1 megohm resistance between operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

Recommended Materials and Equipment

Other materials and equipment that are recommended for use in preventing static electricity include:

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins, and other assembly or soldering aids
- Conductive foam
- Conductive tabletop workstations with ground cord of 1 megohm of resistance
- Static dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing 1 megohm ±10% resistance
- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Metal tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

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REMOVAL & REPLACEMENT PROCEDURES

Service Considerations

Tool Requirements

- Phillips screwdriver
- Needle-nose pliers
- Flathead screwdriver
- Compaq Utilities software

Screws

The screws used in these products are not interchangeable. If an incorrect screw is used during the reassembly process, it could cause damage to the unit. Compaq strongly recommends that all screws removed during the disassembly process be kept with the part that was removed, then returned to their proper locations.

IMPORTANT:	As each subassembly is removed from the computer, it should be placed away from the work area to prevent damage.

Cables and Connectors

Most cables used throughout the unit are *ribbon cables*. These must be handled with extreme care to avoid damage. Apply only the tension required to seat or unseat the cables during insertion or removal from the connector. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing the cables, and ensure that they are placed in such a way that they cannot be caught or snagged by parts being removed or replaced.

CAUTION: When servicing these computers, ensure that cables are placed in their proper location during the reassembly process. Improper cable placement can cause severe damage to the unit.

Ribbon Cable Positions

CD/DVD/CD-RW drive
Hard drive
Diskette drive
Zip drive
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REMOVAL & REPLACEMENT PROCEDURES

Preparation for Disassembly

To prepare the computer for removal and replacement procedures, complete the following steps:

1. Remove any diskette, compact disc, or tape from the computer.
2. Turn off the computer and any peripheral devices that are connected to the computer.

CAUTION: The computer power switch should be turned off before you disconnect any cables.

3. Disconnect the power cord from the electrical outlet, and then from the computer.
4. Disconnect all peripheral device cables from the computer.

IMPORTANT:	During disassembly, label each cable as you remove it. Be sure to note its position and routing.

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REMOVAL & REPLACEMENT PROCEDURES

Chassis

Removal

1. Perform the preparation procedures.
2. Remove the three screws from the back of the computer as shown.
3. With one hand, grasp the handle on the back of the computer chassis while holding the cover with the other hand, and pull until the chassis stops.
4. Lift up on the chassis and pull it completely out of the cover.

Replacement

To replace the chassis, reverse this procedure.

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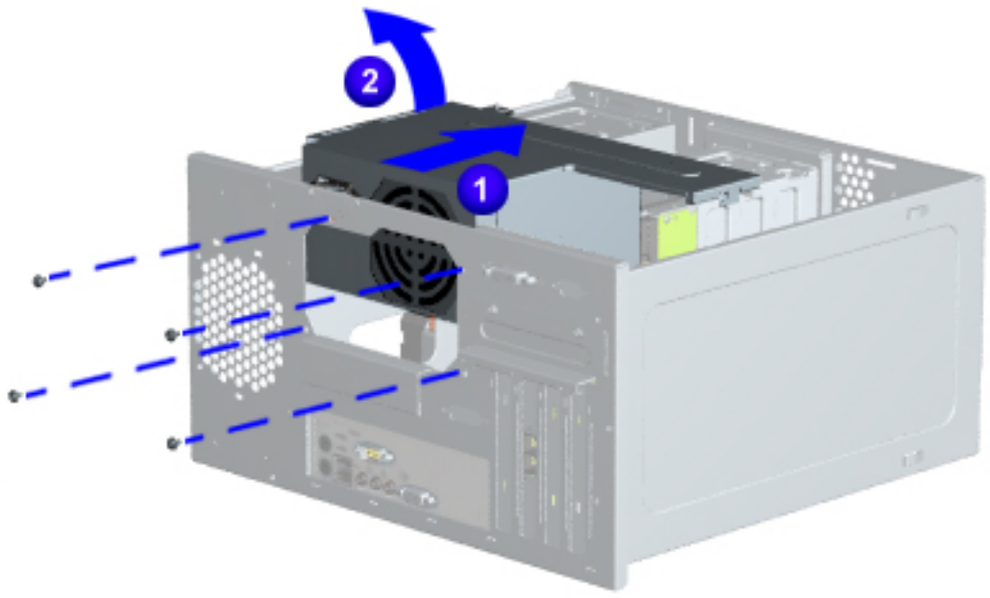

Power Supply

1 Perform preparation procedures.

2 Remove the chassis.

3 Gently lay the computer on its side (rear connectors should be closest to the working surface).

4 Remove the four screws that secure the power supply to the rear of the chassis as shown.

5 Slide the power supply away from the back of the chassis ❶, flip it up and away ❷, and slide it to the right to remove it from the slots.

Replacement

To replace the power supply, reverse this procedure.

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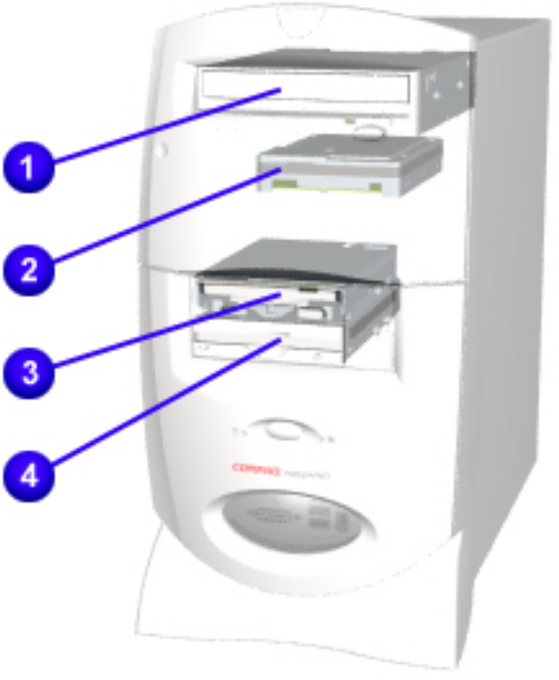
REMOVAL & REPLACEMENT PROCEDURES



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1 CD/DVD/CD-RW drive

2 3.5" Hard drive or 5.25" Hard drive

3 Zip drive (available on select models)

4 Diskette drive

CD or DVD drive
3.5" Hard drive
5.25" Hard drive
Zip drive
3.5" Diskette drive
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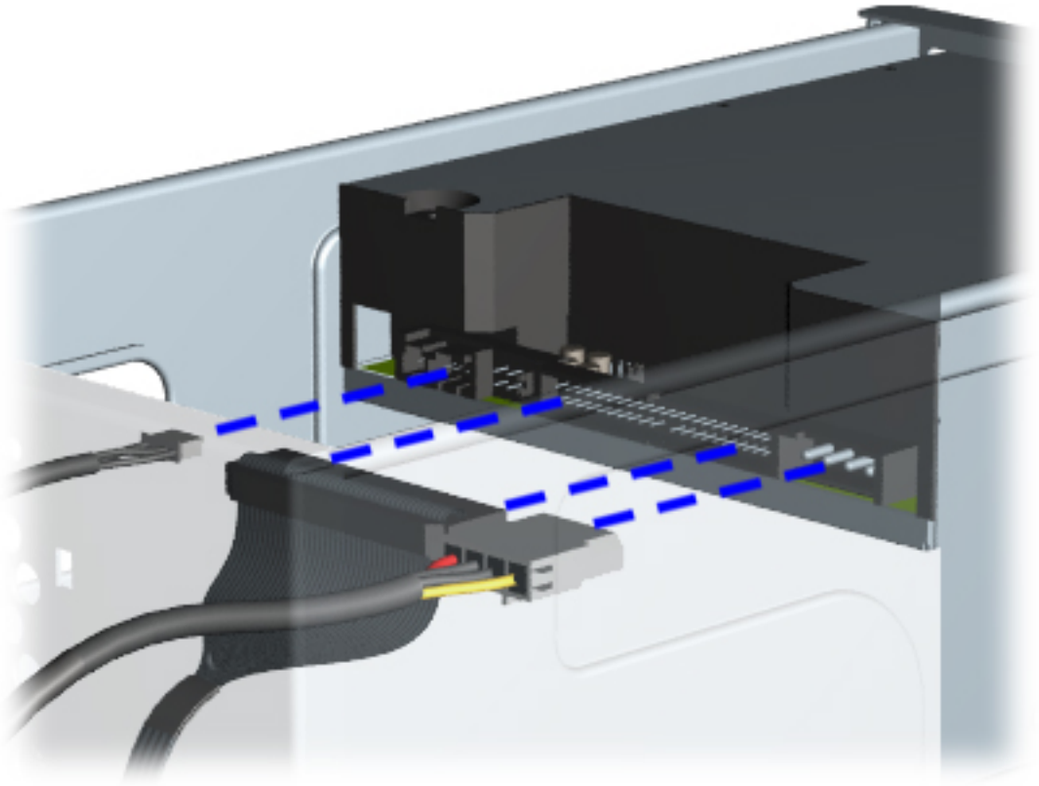
REMOVAL & REPLACEMENT PROCEDURES



Mass Storage Devices

CD/DVD/CD-RW Drive

NOTE:	Click here to see how to remove a CD or DVD that has jammed in the drive.

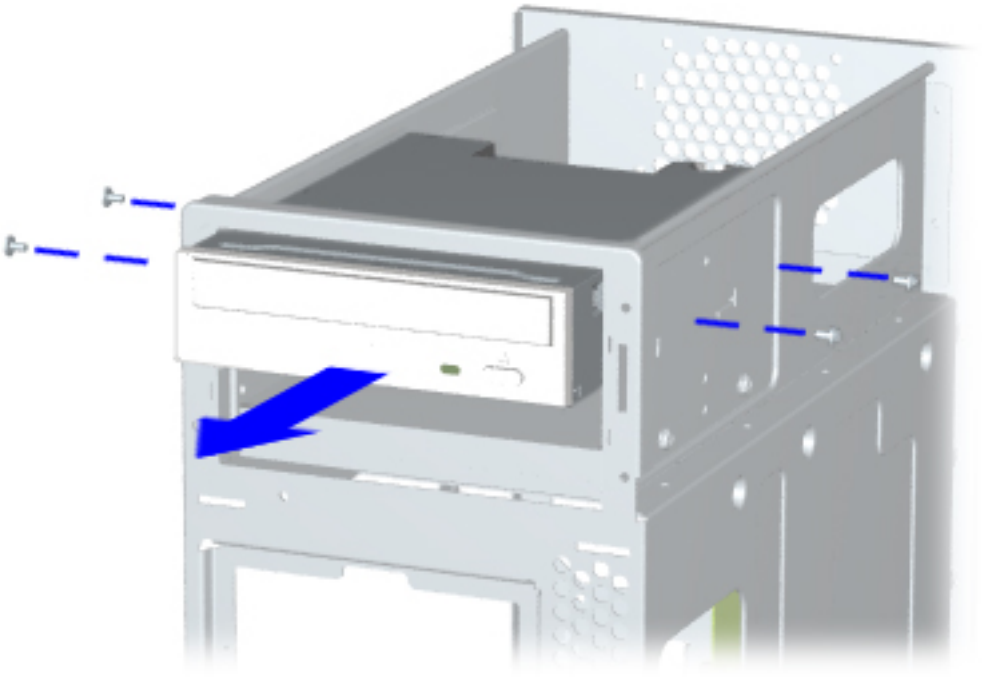
To remove the CD or DVD drive, complete the following five steps:

Removal

1. Perform preparation procedures.
2. Remove the cover.
3. Disconnect the signal, power, and audio cables from the CD or DVD drive.

NEXT STEP

REMOVAL & REPLACEMENT PROCEDURES



Mass Storage Devices

CD or DVD Drive, continued

4 Remove the four screws from the sides of the CD or DVD drive.

5 Pull the CD or DVD drive straight out of the front of the chassis.

Replacement

To replace the CD or DVD drive, reverse this procedure.

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Zip drive
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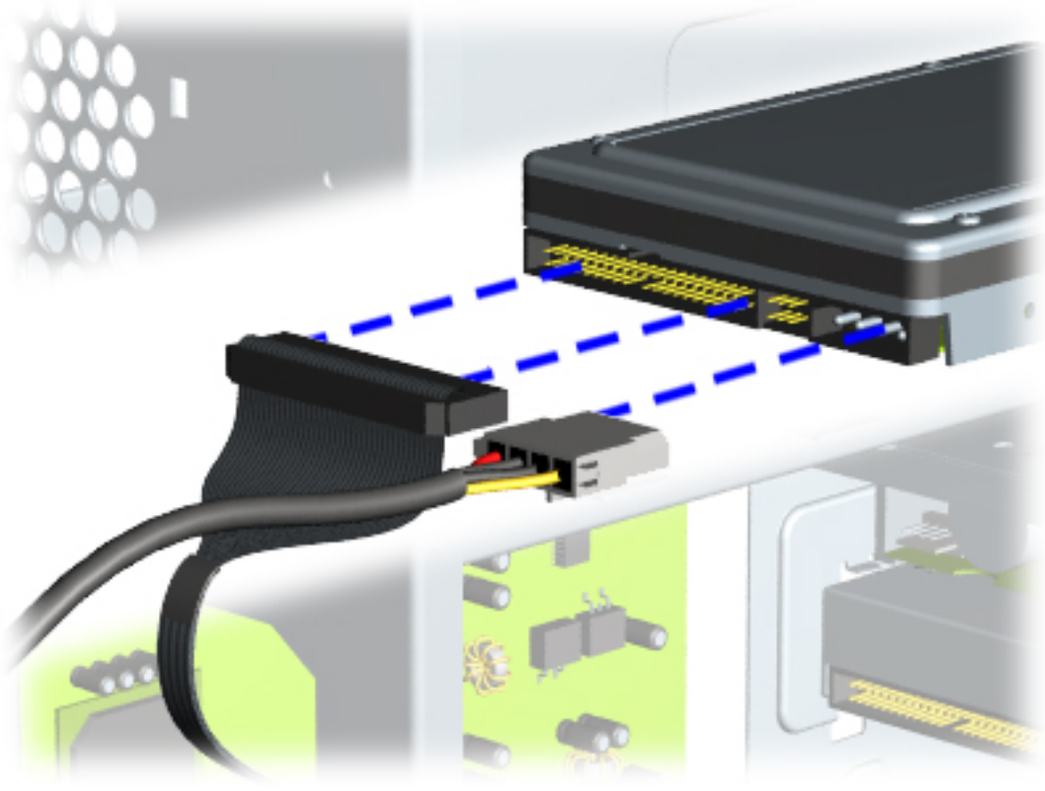


Mass Storage Devices

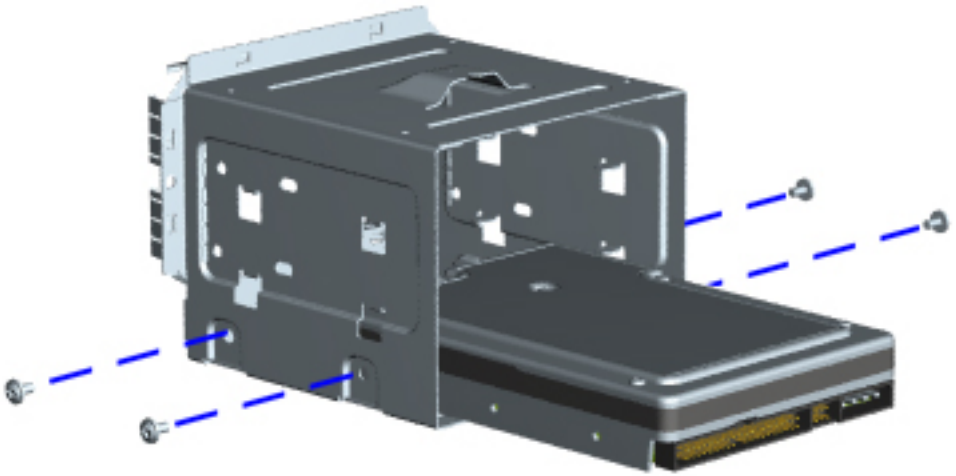
3.5" Hard Drive

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Remove the power supply.
4. Disconnect the signal and power cables from the hard drive.

NEXT STEP

REMOVAL & REPLACEMENT PROCEDURES



Mass storage devices

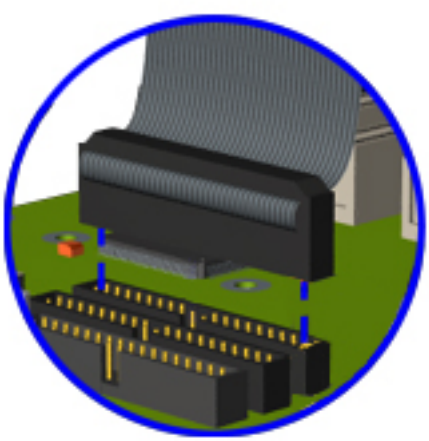
3.5" Hard Drive, continued

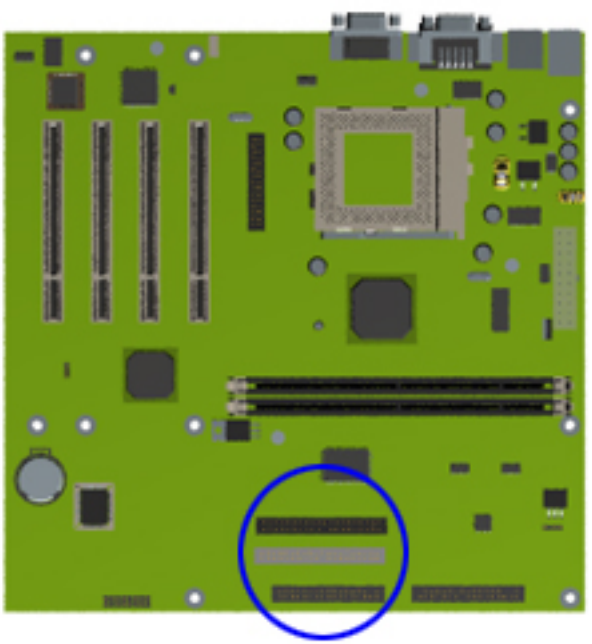
5 Remove the four screws from the side of the hard drive cage.

6 Remove the hard drive from the back of the drive cage.

NEXT STEP

REMOVAL & REPLACEMENT PROCEDURES





Mass storage devices

3.5" Hard Drive, continued

7 Disconnect the hard drive cable from the board.

Replacement

To replace the 3.5-inch hard drive, reverse this procedure.

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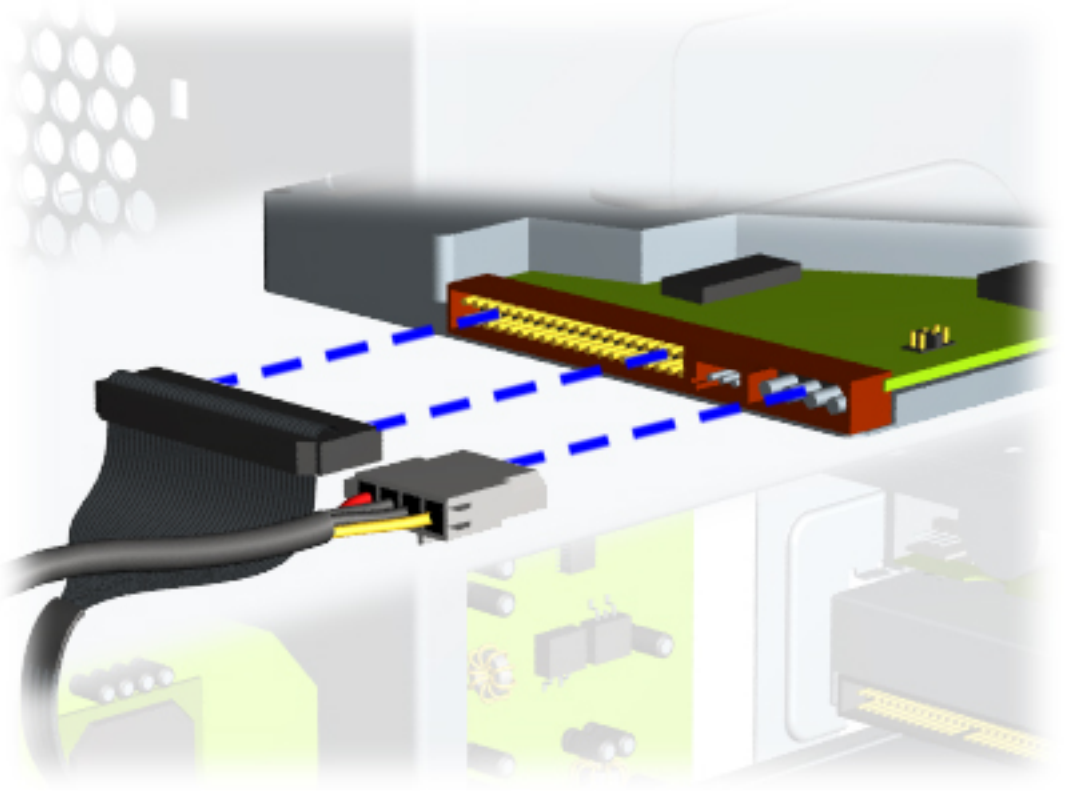


Mass Storage Devices

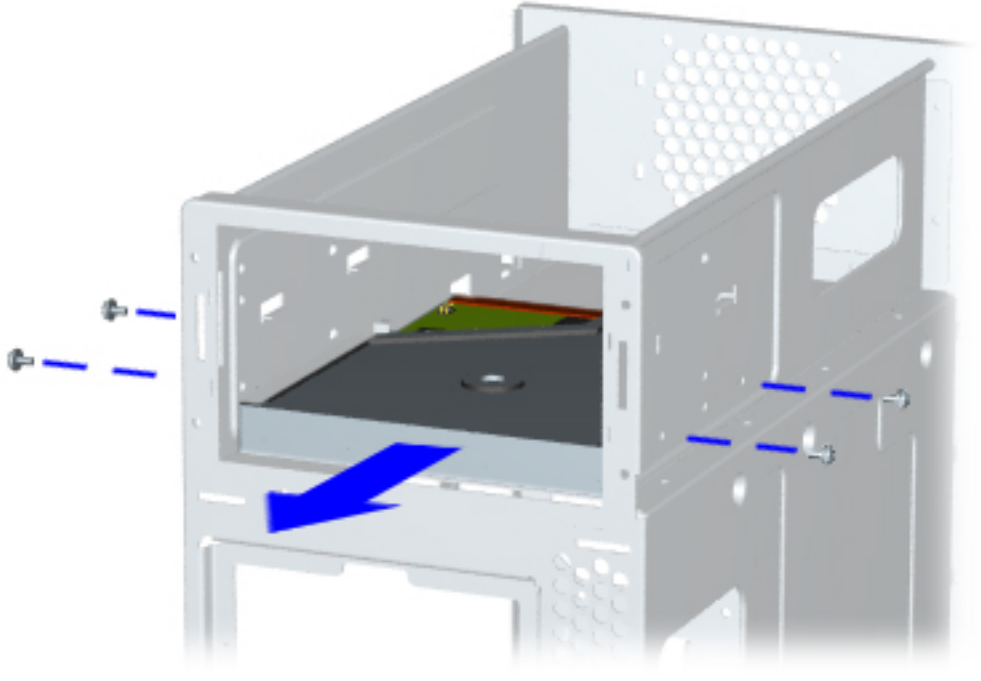
5.25" Hard Drive

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Remove the power supply.
4. Disconnect the signal and power cables from the hard drive.

NEXT STEP

REMOVAL & REPLACEMENT PROCEDURES



Mass Storage Devices

5.25" Hard Drive, continued

4 Remove the four screws from the sides of the hard drive.

5 Pull the hard drive from the front of the chassis.

Next Step

REMOVAL & REPLACEMENT PROCEDURES

Mass Storage Devices

5.25" Hard Drive, continued

6 Disconnect the hard drive cable from the board.

Replacement

To replace the hard drive, reverse this procedure.

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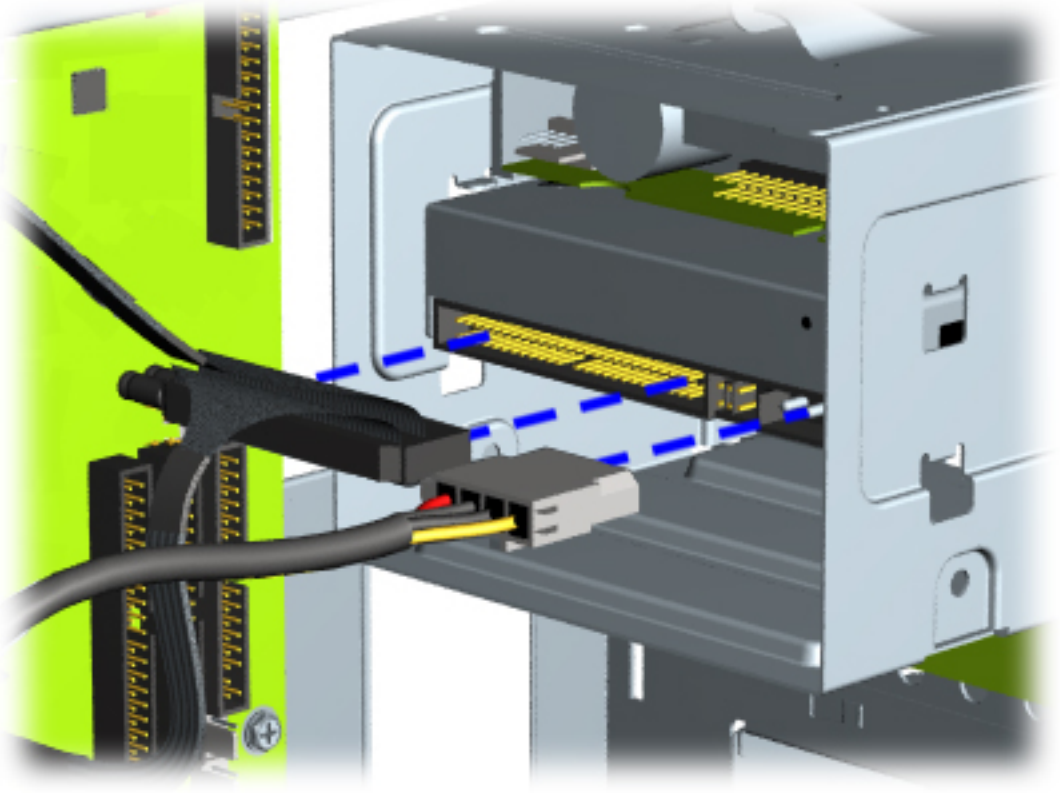

Mass Storage Devices

Zip Drive

1. Perform preparation procedures.
2. Remove the cover.
3. Disconnect the signal and power cables from the Zip drive.

NEXT STEP

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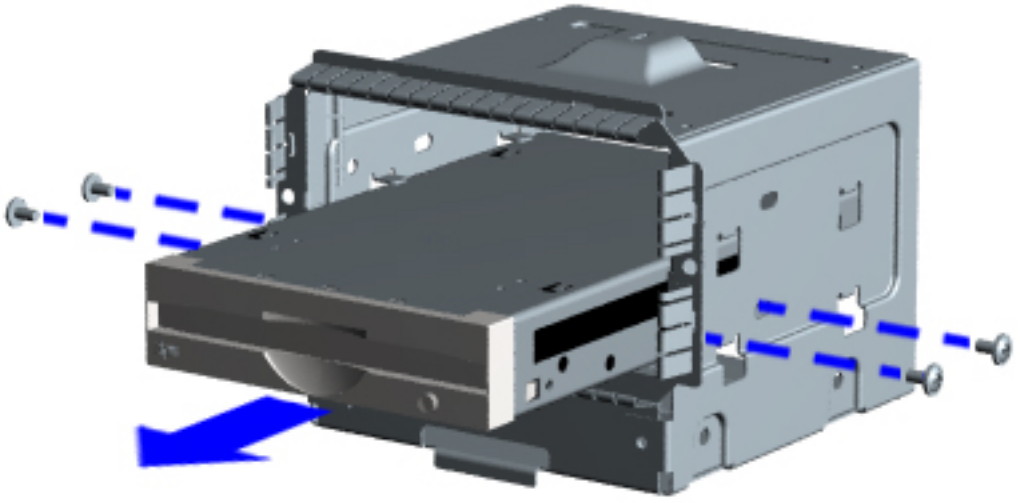


Mass Storage Devices

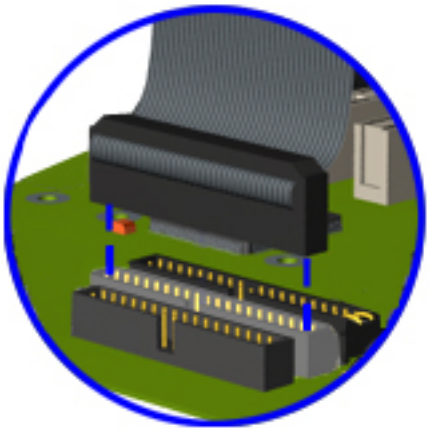
Zip Drive Removal, Continued

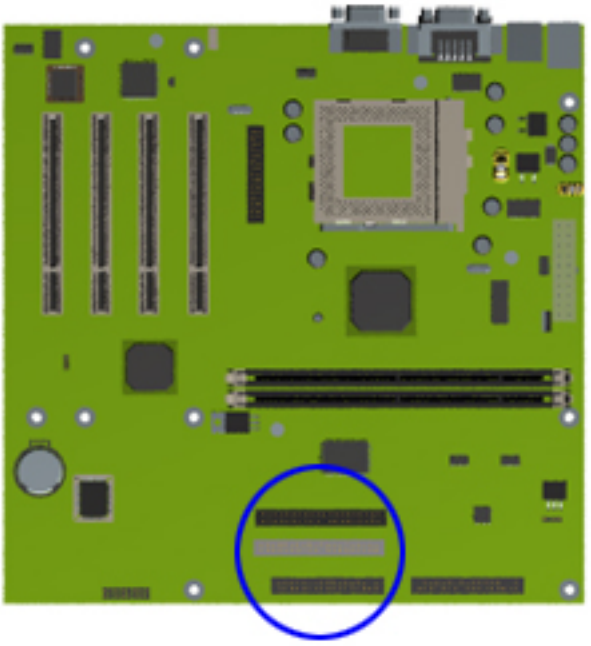
4 Remove the four screws from the sides of the Zip drive.

5 Remove the Zip drive from the front of the drive cage assembly.

Next Step.

REMOVAL & REPLACEMENT PROCEDURES





Mass Storage Devices

Zip Drive Removal, Continued

4 Remove the zip drive cable from the board.

Replacement

To replace the Zip drive, reverse the removal procedure.

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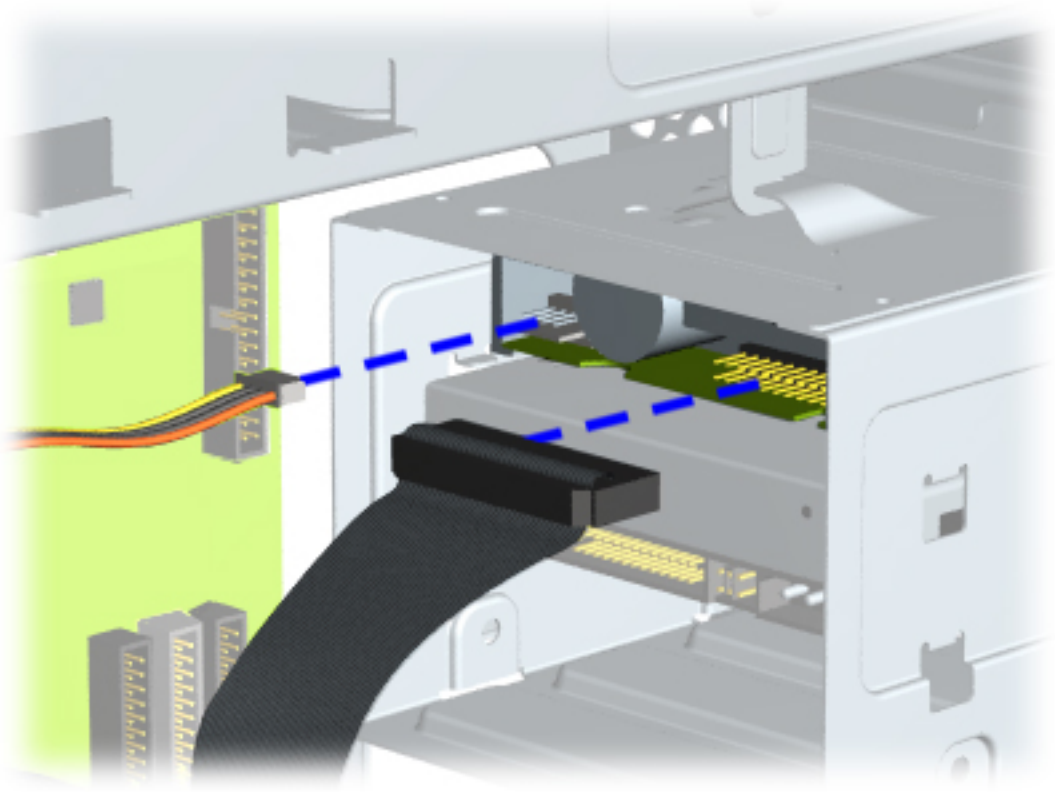


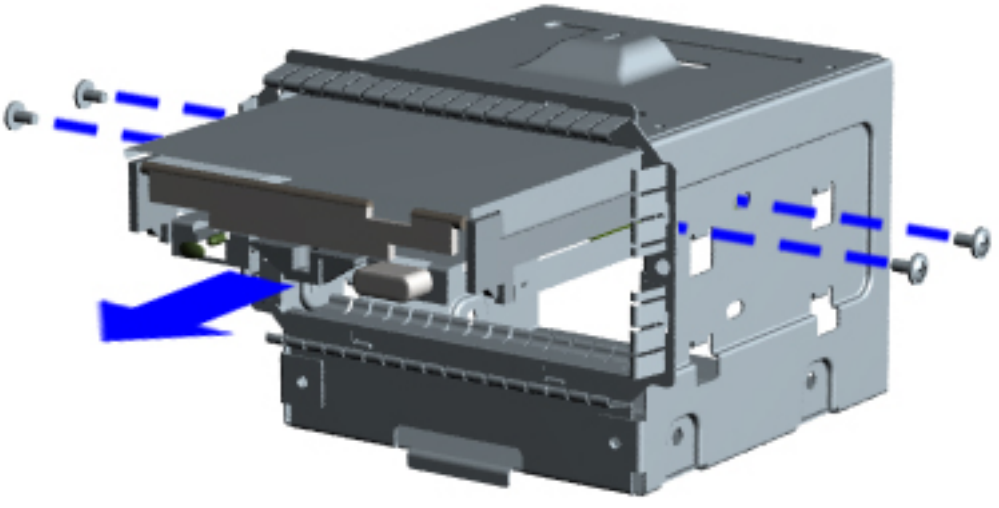
Mass Storage Devices

Diskette Drive

1. Perform the preparation procedures.
2. Remove the cover.
3. Disconnect the signal and power cables from the diskette drive.

NEXT STEP

REMOVAL & REPLACEMENT PROCEDURES



Mass Storage Devices

Diskette Drive, continued

4 Remove the four screws from the sides of the drive bracket.

5 Remove the drive from the front of the drive age assembly.

Replacement

To replace the diskette drive, reverse this procedure.

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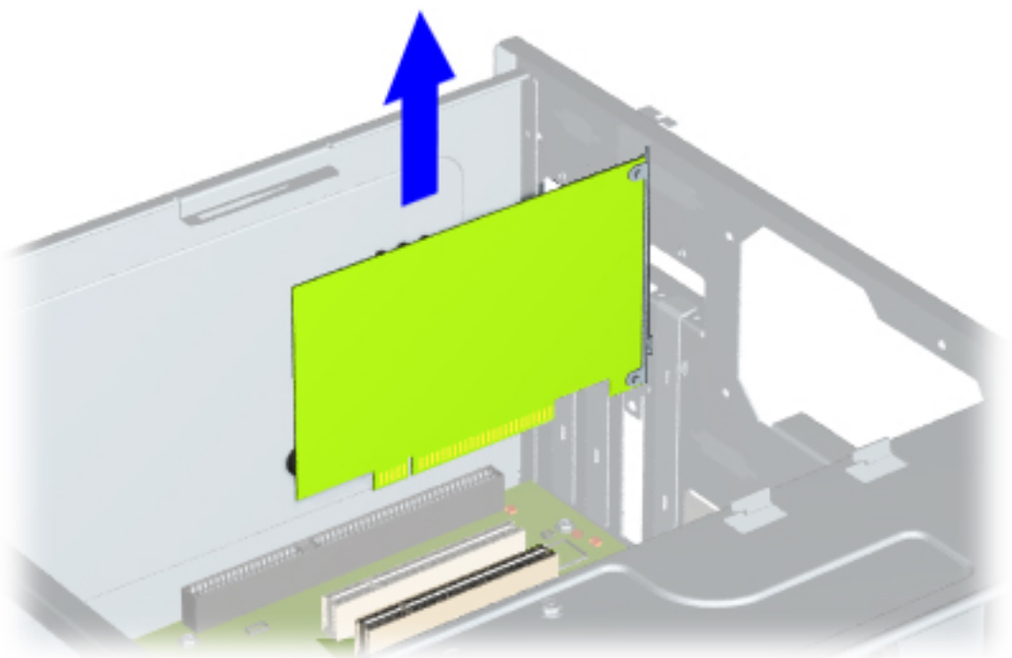

Fax/modem

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Remove the power supply.
4. Remove the screws holding the option card bracket to the chassis.
5. Remove the bracket and pull the fax/modem out of the slot.

Replacement

To replace the fax/modem, reverse this procedure.

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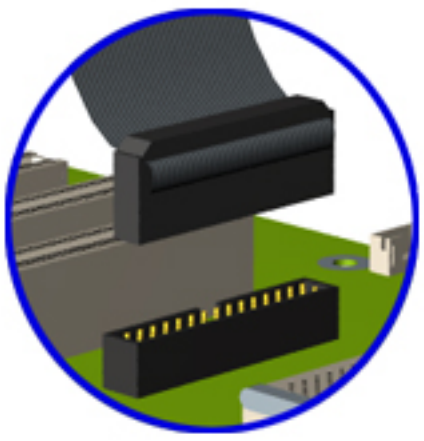

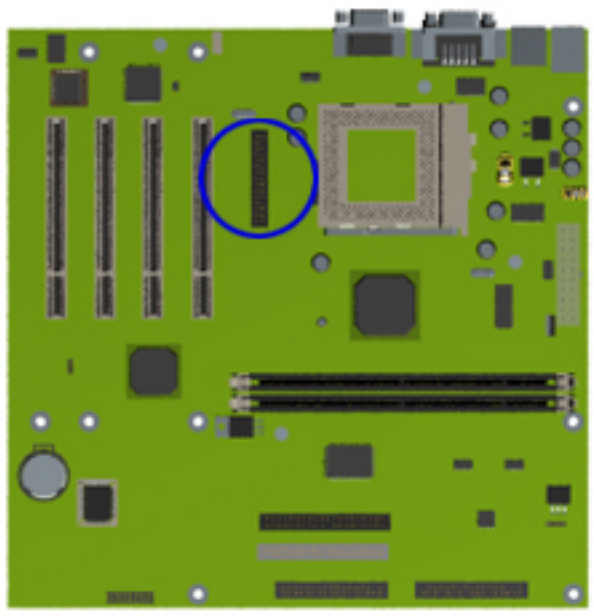

Parallel Port Cable Assembly

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Remove the power supply.
4. Disconnect the parallel cable from the system board.
5. Remove the two screwlocks that secure the parallel port to the chassis and pull the parallel port cable assembly out of the chassis.

Replacement

To replace the parallel port, reverse this procedure.

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REMOVAL & REPLACEMENT PROCEDURES

PCI Bracket

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Gently lay the computer on its side (rear connectors should be closest to the working surface).
4. Remove the two screws that secure the PCI bracket to the rear of the chassis as shown.
5. Remove the bracket.

Replacement

To replace the PCI bracket, reverse this procedure.

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Heat sink & processor

I/O panel

Memory module

RTC battery

System board components

Heat sink & perocesor
I-O panel
Memory module
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System board components
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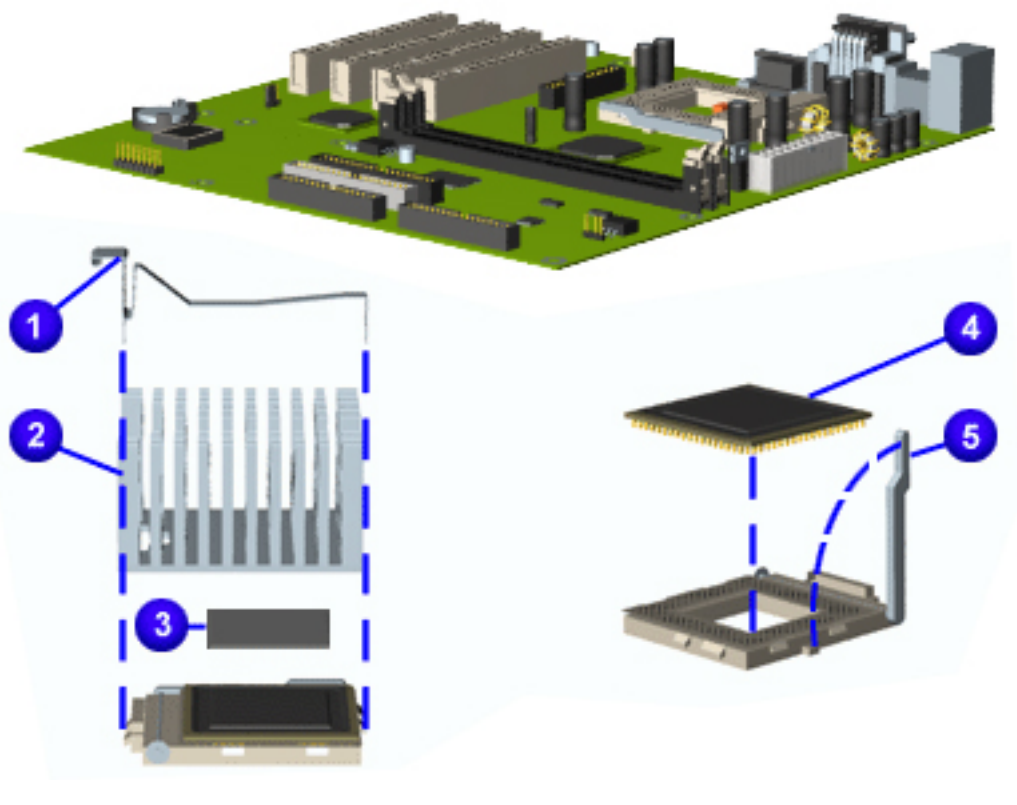
REMOVAL & REPLACEMENT PROCEDURES



System Board Components

Heat Sink and procesor

Removal

1 Perform preparation procedures.

2 Remove the chassis.

3 Remove the power supply.

4 Locate the heat sink clip 1 and release the clip from the heat sink 2.

5 Lift the heat sink lever and remove the heat sink from the system board.

6 Lift the socket lever 5 and remove the processor 4 from the socket

Replacement

To replace the heat sink, reverse this procedure.

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Memory module
RTC battery
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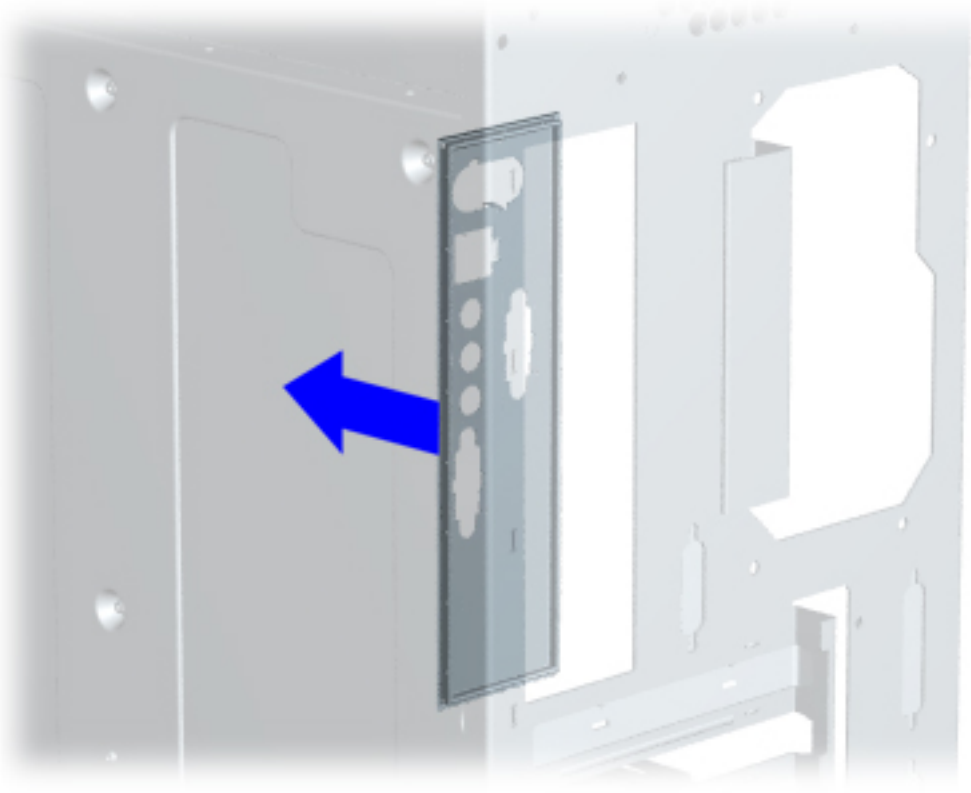
REMOVAL & REPLACEMENT PROCEDURES



System Board Components

I/O Panel

Removal

1 Perform preparation procedures.

2 Remove the chassis.

3 Remove the power supply.

4 Remove mass storage devices.

5 Remove the fax/modem.

6 Remove the system board.

7 Gently push the I/O panel into the chassis from the rear of the chassis and remove.

Note: Your I/O panel may look slightly different.

Replacement

To replace the I/O panel, reverse this procedure.

Heat sink & processor
I-O panel
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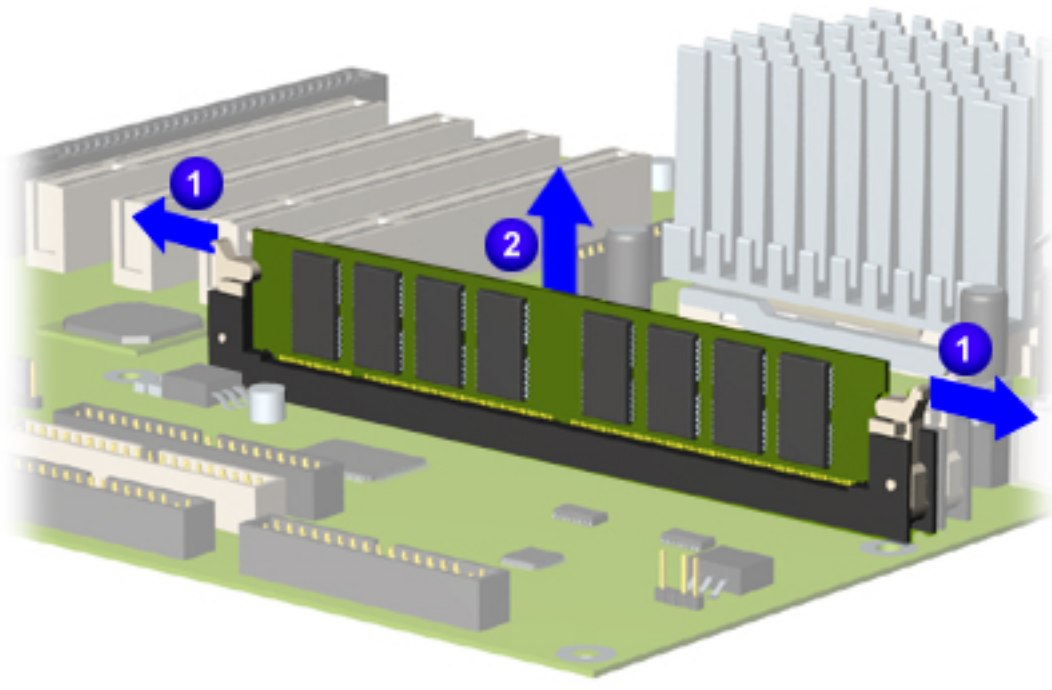
REMOVAL & REPLACEMENT PROCEDURES



System Board Components

Memory Module (DIMM)

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Remove the power supply.
4. Remove mass storage devices.
5. Remove the fax/modem.
6. Remove the system board bracket.
7. Release the retention clips of the socket (1) and unplug the DIMM from the system board (2).

Replacement

To replace the DIMM, reverse this procedure.

Heat sink & processor
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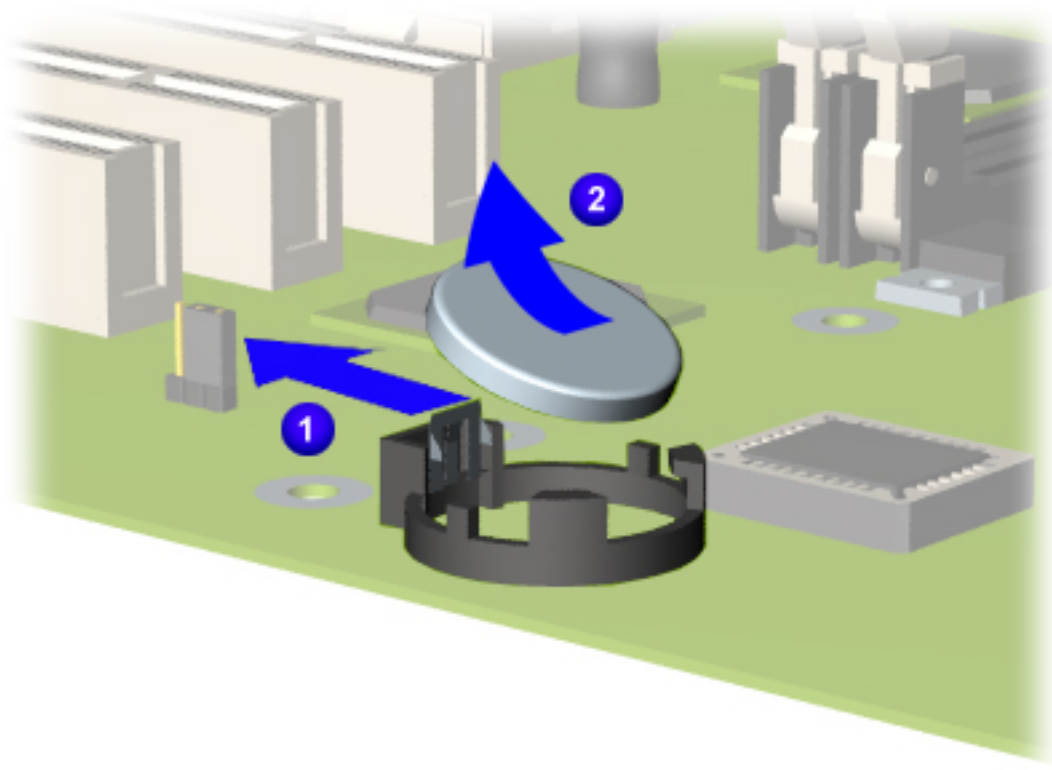
REMOVAL & REPLACEMENT PROCEDURES



System Board Components

Battery

Removal

1 Perform preparation procedures.

2 Remove the chassis.

3 Remove the power supply.

4 Remove mass storage devices.

5 Remove the fax/modem.

7 Locate the RTC battery.

8 Push out the socket levers 1 and slide the RTC battery out of the socket 2.

Replacement

To replace the RTC battery, reverse this procedure.

WARNING: The clock/CMOS lithium battery may explode if mistreated. Do not abuse. Use only replacement batteries supplied by Compaq Computer Corporation.

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Memory module
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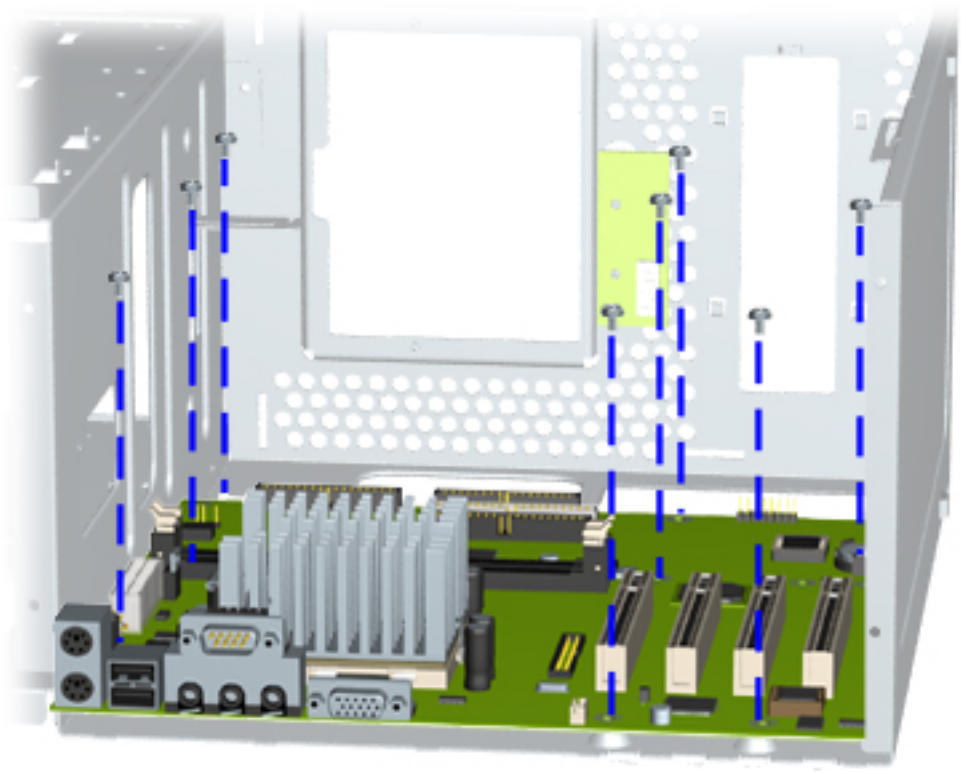
REMOVAL & REPLACEMENT PROCEDURES



System Board Components

System Board

Removal

1 Perform preparation procedures.

2 Remove the chassis.

3 Remove the power supply.

4 Remove floppy drive.

5 Remove the fax/modem.

6 Remove the processor.

7 Remove the memory module.

8 Remove all cables form the system board.

9 Remove the eight screws from the system board (may differ slightly from photo) and separate it from the bracket.

Replacement

To replace the system board, reverse this procedure.

NOTE:	The system board spare part kit does not include the processor, cache, DIMM, or video expansion module. The components must be transferred from the old system board to the new system board.

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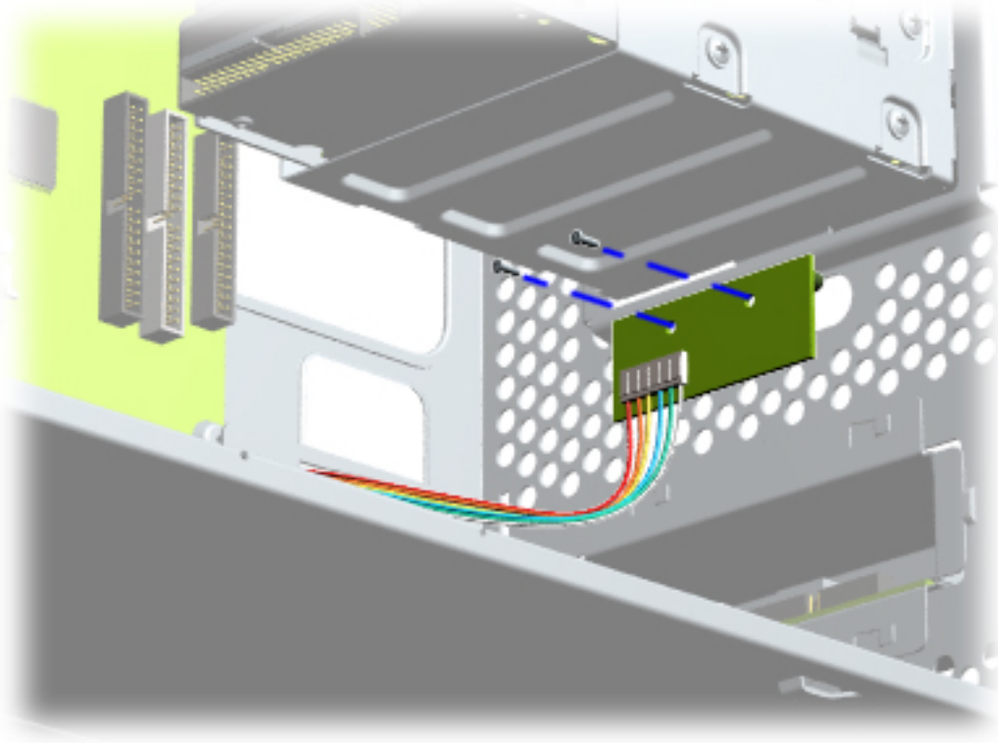

Instant On Button Board

Removal

1. Perform preparation procedures.
2. Remove the chassis.
3. Remove the two screws from the button assembly and remove the assembly from the chassis.

Next Step .

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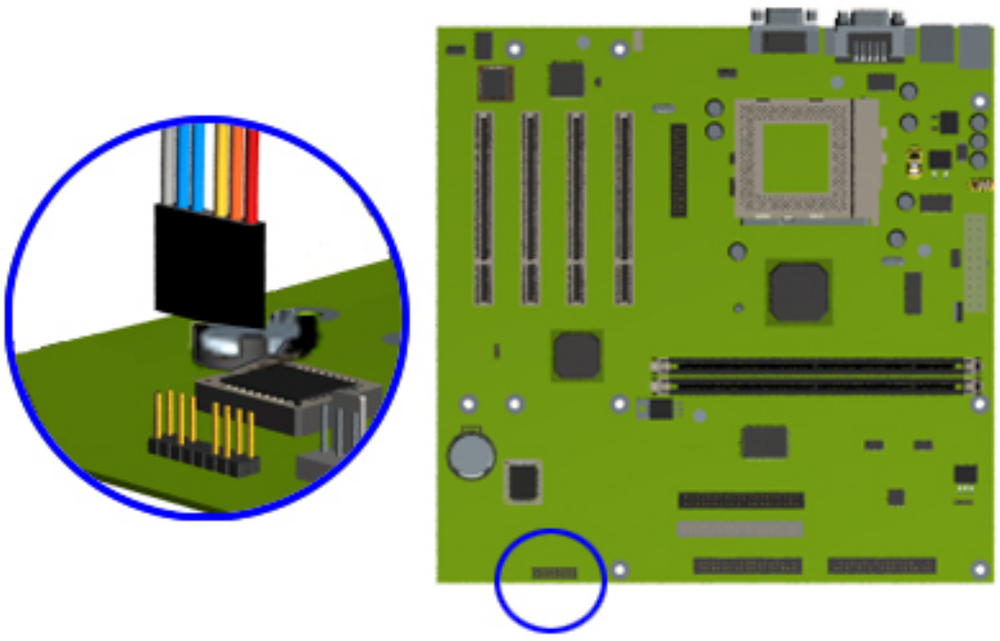
REMOVAL & REPLACEMENT PROCEDURES

Instant On Button Board, continued



Removal, continued

3 Remove the Button Board cable from the system board.

4 Remove the two screws from the button assembly and remove the assembly from the rear of front bezel.

Replacement

To replace the button board assembly, reverse this procedure.

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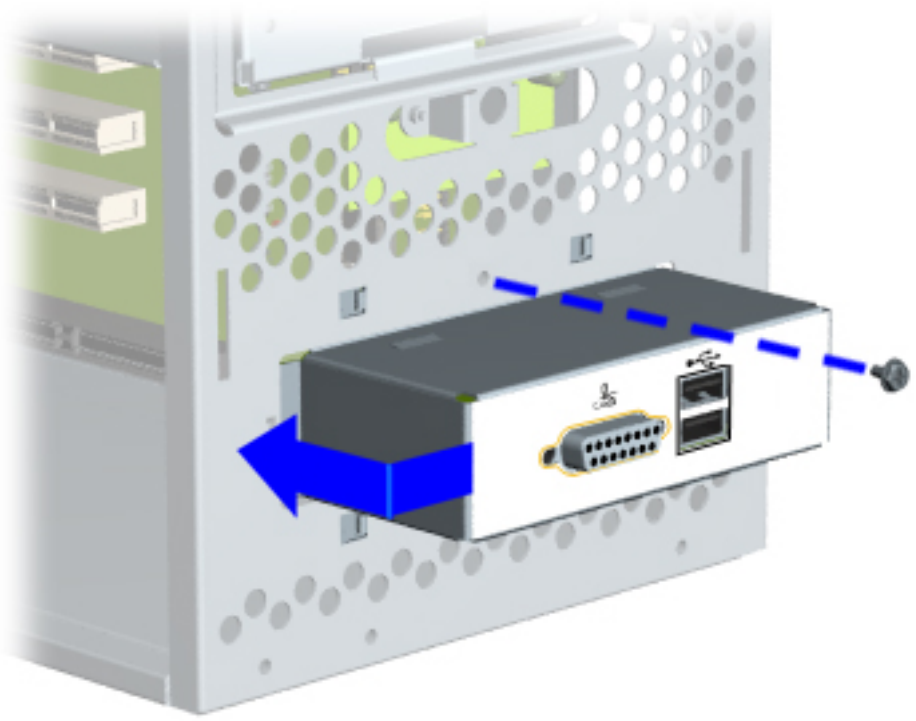


Creativity Action Center - (available on select models only)

Removal

1 Perform preparation procedures.

2 Remove the cover.

3 Disconnect the cable from the creativity action center

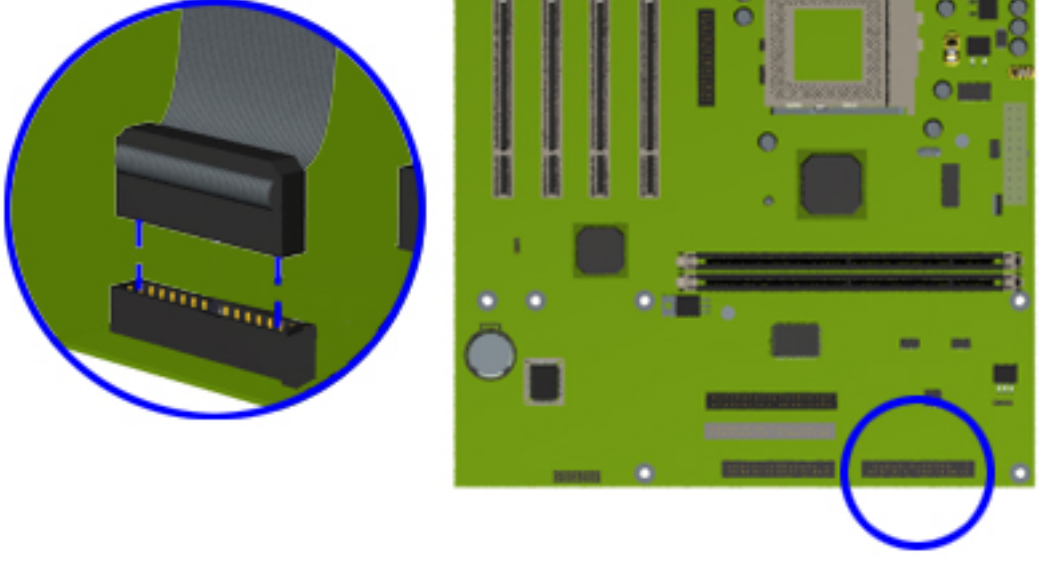
4 Remove the screw holding the Creativity Action Center port to the chassis.

5 Release the top clip and slide the Creativity Action Center port up and push it in to remove it.

NEXT STEP

REMOVAL & REPLACEMENT

Creativity Activity Center, continued



6 Remove the Creativity Action Center cable from the board.

Removal

To replace the Creativity Action Center, reverse this procedure.

JUMPER & SWITCH INFORMATION - INDEX PAGE

System board

Hard drive

CD drive

DVD drive

CD-RW

Zip drive (available on select models)

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JUMPER & SWITCH INFORMATION

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JUMPER & SWITCH INFORMATION

System Board Connectors

JP1 CMOS Jumper Settings

CMOS Normal	CMOS Clear
pins 1-2	pins 2-3

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JUMPER & SWITCH INFORMATION

Jumper Settings

This board has no jumper settings except for clearing CMOS. Click here to see the CMOS jumper settings.

Clearing CMOS

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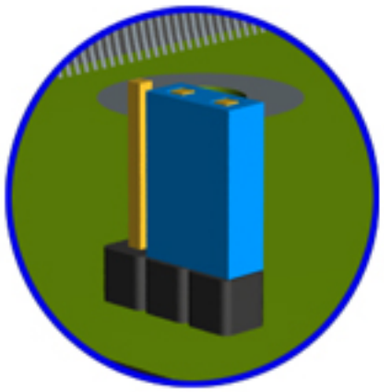
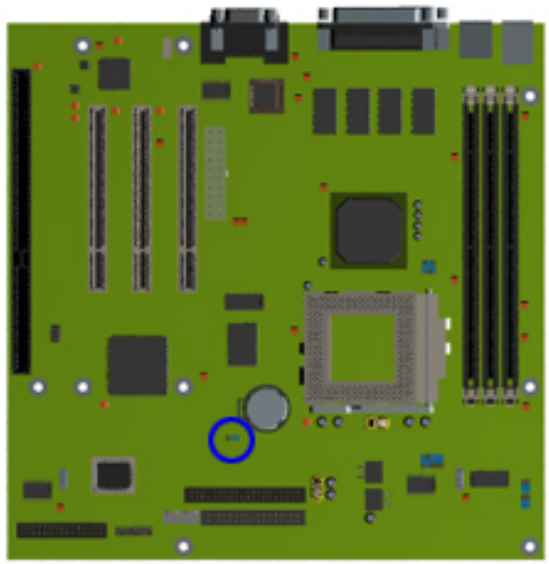
Clearing CMOS





CMOS jumper location

1. Complete the preparation for disassembly.
2. Remove the chassis.
3. Remove the fax/modem board.
4. Open the system board bracket.
5. To clear CMOS the jumper (1) (JP4) should be placed on pins 1-2 for ten (10) seconds. To return to normal operation, place the jumper on pins 2-3.
6. Replace the system board bracket and perform the desired troubleshooting.

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Power-On Self Test (POST)

POST is a series of diagnostic tests that run automatically when the system is turned on. After the computer is turned on, ***POST*** checks the following assemblies to ensure that the computer system is properly functioning:

- Keyboard
- System board
- Memory modules
- Video memory
- Diskette drives
- Hard drive
- Power supply

POST also detects the type of mass storage devices installed in the computer.

If ***POST*** finds an error in the system, an error condition is indicated by an audible and/or visual message. The table below gives explanations of the error codes and a recommended course of action.

NOTE:	An external speaker must be installed into the speaker output connector to hear audible beeps during ***POST***.

Click a link below to find the probable cause and recommended action for a given error message.

Diskette Drive A or B Error	Keyboard Controller Error	System BIOS Shadowed
Extended RAM failed at offset *nnn*	Keyboard Error	System Cache Error
Failing Bits *nnn*	Operating System Not Found	System CMOS Checksum Bad
Fixed Disk 0 or 1 Failure	Parity Check 1	System RAM Failed at Offset, *nnn*
Fixed Disk Controller Failure	Parity Check 2	System Timer Error
Incorrect Drive A Type	Real Time Clock Error	UMB Upper Limit Segment Address *nnn*
Invalid NVRAM Media Type	System Battery is Dead	Video BIOS Shadowed

POST Messages

Error message	Probable Cause	Recommended Action
Diskette Drive A or B Error	Drive A: or B: is present, but fails the BIOS POST diskette tests	1. Run Setup. 2. Replace the signal cables. 3. Replace the drive.
Extended RAM failed at offset *nnn*	Extended memory not working or not configured properly	1. Replace the memory modules. 2. Replace the system board.
Failing Bits *nnn*	*nnn* is a map of the bits at the RAM address which failed the memory test	1. Run Setup. 2. Replace the system board.
Fixed Disk 0 or 1 Failure	Hard drive is not working or not configured properly	1. Run Setup. 2. Replace the signal cable. 3. Replace the hard drive.
Fixed Disk Controller Failure	Hard drive is not working or not configured properly	1. Run Setup. 2. Replace the system board.
Incorrect Drive A Type	Type of diskette in drive A: not correctly identified	1. Run Setup. 2. Replace the diskette drive.
Invalid NVRAM Media Type	Problem with NVRAM (CMOS) access	Replace the system board.
Keyboard Controller Error	Keyboard, I/O keyboard controller (on system board), or mouse error	1. Replace the keyboard. 2. Replace the mouse. 3. Replace the system board.
Keyboard Error	Keyboard, I/O keyboard controller (on system board), or mouse error	1. Replace the keyboard. 2. Replace the mouse. 3. Replace the system board.
Operating System Not Found	Operating system cannot be located on either drive A: or C:	Run Setup.
Parity Check 1	Parity error found in the system bus	1. Run Setup. 2. Replace the memory modules. 3. Replace the system board.
Parity Check 2	Parity error found in the I/O bus	1. Run Setup. 2. Replace the ISA board (modem).
Real Time Clock Error	Real-time clock fails BIOS test	Replace the system board.
System Battery is Dead	RTC battery is dead	1. Replace the RTC battery. 2. Run Setup.
System BIOS Shadowed	System BIOS copied to Shadow RAM	Status message. No action required.
System Cache Error	RAM cache failed the BIOS test	Run Setup.
System CMOS Checksum Bad	CMOS is corrupted or modified incorrectly	Run Setup.
System RAM Failed at Offset, *nnn*	System RAM failed	Replace memory modules.
System Timer Error	DMA, timers, etc.	Replace the system board.
UMB Upper Limit Segment Address *nnn*	Displays the address *nnn* of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS	Status message. No action required.
Video BIOS Shadowed	Video BIOS successfully copied to shadow RAM	Status message. No action required.

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Configuration

This section explains how to use Setup and Compaq Utilities which should be accessed in the following instances:

- When a system configuration error is detected during the Power-On Self-Test (POST)
- To change factory default settings for some of the computer features
- To change the system configuration, which is sometimes necessary when you add or remove optional hardware
- To set system configuration features

Click a link below to go to the appropriate subsection.

Preparing the Computer

Setup

Accessing Compaq Utilities Options

View System Information (INSPECT)

Preparing the Computer

If you encounter an error condition, complete the following steps before starting problem isolation procedures:

1. Ensure proper ventilation. The computer should have a 3-inch (7.6 cm) clearance at the back of the system unit.
2. Turn off the computer and peripheral devices.

△	**CAUTION:** Always ensure that the power is off before disconnecting or reconnecting the mouse, keyboard, or any other peripheral devices. Disconnecting or connecting the keyboard or mouse while the unit power is on can damage the system board.

3. Disconnect any peripheral devices other than the monitor and keyboard. Do not disconnect the printer if you want to test it or use it to log error messages.
4. Install loop-back and terminating plugs for complete testing.

Setup

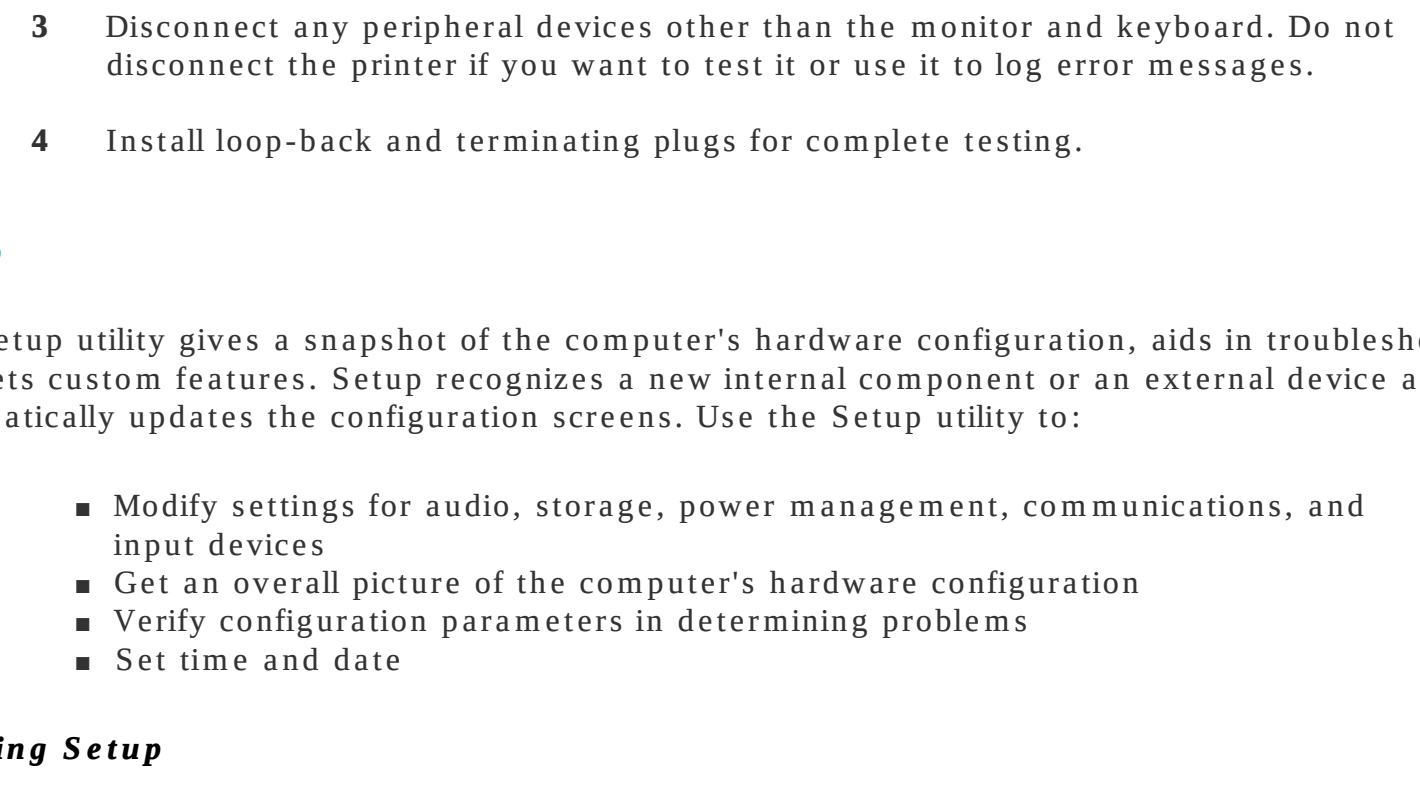
The Setup utility gives a snapshot of the computer's hardware configuration, aids in troubleshooting, and sets custom features. Setup recognizes a new internal component or an external device and automatically updates the configuration screens. Use the Setup utility to:

- Modify settings for audio, storage, power management, communications, and input devices
- Get an overall picture of the computer's hardware configuration
- Verify configuration parameters in determining problems
- Set time and date

Running Setup

To access the Setup utility, turn on the computer and press the **F10** key when the Compaq logo appears. The following menu will appear:

NOTE:	The actual menu displayed on your computer may vary slightly, depending on your configuration.



Accessing Compaq Utilities Options

This section provides information about the menu options accessible from the **Compaq Utilities** menu.

Create a Compaq Utilities Diskette

A Compaq Utilities diskette must be created to troubleshoot the system. To create a Compaq Utilities diskette, complete the following steps:

1. Insert the *QuickRestore CD* into the CD drive.
2. From the Windows desktop, click on **Start,** then **Program,** then **Windows Explorer.**
3. Click on the CD drive icon.
4. Double-click on the **PCdiags** folder.
5. Insert a diskette in the diskette drive.
6. Double-click on the **QRST5.exe** icon.
7. Press **Enter** when the QuickRestore label appears.
8. After the CD has completed copying to the diskette, eject the *QuickRestore CD*.

View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about the system once it has been configured. INSPECT operates with MS-DOS and provides information about the system operating environment including:

- Contents of the operating system startup files
- Current memory configuration
- ROM version
- Type of processor and coprocessor
- Diskette and hard drives
- Active printer and communications interfaces
- Modem

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Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while running the Compaq Utilities program. These error codes help identify possibly defective subassemblies.

Tables listed on this page give possible error codes, descriptions of each error condition, and actions required to resolve the error condition.

IMPORTANT:	Retest the system after completing each step. If the problem has been resolved, do not proceed with the remaining steps.

For assistance in the removal and replacement of a particular subassembly, see *Removal and Replacement Procedures*.

100-xx	Processor	*800-xx*	Monochrome video	*3200-xx*	Audio
200-xx	Memory	*1100-xx*	Serial	*3300-xx*	CD or DVD
300-xx	Keyboard	*1200-xx*	Modem	*6600-xx*	CD or DVD
400-xx	Parallel (printer)	*1700-xx*	Hard drive	*8600-xx*	Pointing device interface
500-xx	Monitor	*1900-xx*	Tape drive		
600-xx	Diskette drive	*2400-xx*	Video		

Keyboard error codes

Error Code	Description	Recommended Action
301-xx	Keyboard short test, 8042 self-test failed	The following steps apply to error codes 301-xx through 304-xx:
302-xx	Keyboard long test failed	1 Check the keyboard connection. If disconnected, turn the computer off and connect the keyboard.
303-xx	Keyboard LED test, 8042 self-test failed	2 Replace the keyboard and retest.
304-xx	Keyboard typematic test failed	3 Replace the system board and retest.

Parallel (printer) error codes

Error Code	Description	Recommended Action
401-xx	Printer failed or not connected	The following steps apply to error codes 401-xx through 498-xx:
402-xx	Printer data register failed	1 Connect the printer.
403-xx	Printer pattern test failed	2 Check power to the printer.
498-xx	Printer failed or not connected	3 Install the loop-back connector and retest. 4 Replace system board and retest.

Monochrome video error codes

Error Code	Description	Recommended Action
802-xx	Video memory test failed	The following step applies to error codes 802-xx through 824-xx:
824-xx	Monochrome video text mode test failed	Replace the system board and retest.

Serial error codes

Error Code	Description	Recommended Action
1101-xx	Serial Port Test	The following steps apply to error codes 1101-xx through 1109-xx:
		1 Check the switch settings on the serial/parallel device, if applicable.
1109-xx	Clock Register Test	2 Replace the system board and retest.

Modem error codes

Error Code	Description	Recommended Action
1201-xx	Modem Internal Loop-Back Test	The following steps apply to error codes 1201-xx through 1210-xx:
1202-xx	Modem Time-Out Error	1 Refer to modem documentation for correct Setup procedures.
1203-xx	Modem External Termination Test	2 Check the modem line.
1204-xx	Modem Auto Originate Test	3 Replace the modem and retest.
1206-xx	Dial Multifrequency Tone Test	
1210-xx	Modem Direct Connect Test	

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Diagnostic Error Codes (continued)

Memory error codes		
Error Code	**Description**	**Recommended Action**
200-xx	Invalid memory configuration	1. Verify memory module value compatibility. 2. Reinsert memory in the correct location.
201-xx	Memory machine ID test failed	The following steps apply to error codes 201-xx and 202-xx: 1 Flash the ROM and retest. 2 Replace the memory and retest. 3 Replace the system board and retest.
202-xx	Memory system ROM checksum failed	
203-xx	Memory write/read test failed	The following steps apply to error codes 203-xx through 210-xx: 1 Remove one memory module at a time until the error message stops. 2 Replace other removed modules one at a time, testing each to ensure the error does not return. 3 Replace the system board and retest.
204-xx	Memory address test failed	
206-xx	Increment pattern test failed	
210-xx	Random pattern test failed	

Diskette drive error codes		
Error Code	**Description**	**Recommended Action**
600-xx	Diskette ID drive types test failed	The following steps apply to error codes 600-xx through 698-xx: 1 Replace the diskette and retest. 2 Check and/or replace the diskette power and signal cables and retest. 3 Replace the diskette drive and retest. 4 Replace the system board and retest.
601-xx	Diskette format failed	
602-xx	Diskette read test failed	
603-xx	Diskette write, read, compare test failed	
604-xx	Diskette random seek test failed	
605-xx	Diskette ID media test failed	
606-xx	Diskette speed test failed	
607-xx	Diskette wrap test failed	
608-xx	Diskette write-protect test failed	
609-xx	Diskette reset controller test failed	
610-xx	Diskette change line test failed	
694-xx	Pin 34 is not cut on 360KB diskette drive	
697-xx	Diskette type error	
698-xx	Diskette drive speed not within limits	
699-xx	Diskette drive/media ID error	1. Replace media. 2. Run Setup.

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Diagnostic Error Codes (continued)

Hard drive error codes		
Error Code	**Description**	**Recommended Action**
1700-xx	Hard drive ID types test failed	The following steps apply to error codes 1700-xx through 1799-xx: 1 Run Setup and verify drive type. 2 Replace the hard drive signal and power cables and retest. 3 Replace the hard drive and retest. 4 Replace the system board and retest.
1701-xx	Hard drive format test failed	
1702-xx	Hard drive read test failed	
1703-xx	Hard drive write/read/compare test failed	
1704-xx	Hard drive random seek test failed	
1705-xx	Hard drive controller test failed	
1706-xx	Hard drive ready test failed	
1707-xx	Hard drive recalibration test failed	
1708-xx	Hard drive format bad track test failed	
1709-xx	Hard drive reset controller test failed	
1710-xx	Hard drive park head test failed	
1714-xx	Hard drive file write test failed	
1715-xx	Hard drive head select test failed	
1716-xx	Hard drive conditional format test failed	
1717-xx	Hard drive ECC* test failed	
1719-xx	Hard drive power mode test failed	
1719-x	Hard drive power mode test failed	
1730-x	Fixed Disk 0 does not support DMA Mode	
1731-x	Fixed Disk 1 does not support DMA Mode	
1740-x	Fixed Disk 0 failed Set Block Mode command	
1741-x	Fixed Disk 1 failed Set Block Mode command	
1750-x	Fixed Disk 0 failed Identify command	
1751-x	Fixed Disk 1 failed Identify command	
1760-x	Fixed Disk 0 does not support Block Mode	
1761-x	Fixed Disk 1 does not support Block Mode	
1790-x	Disk 0 Configuration Error	
1792-x	Secondary Disk Controller Failure	
1799-xx	Invalid hard drive type failed	

Error Correction Code

Tape drive error codes		
Error Code	**Description**	**Recommended Action**
1900-xx	Tape ID failed	The following steps apply to error codes 1900-xx through 1906-xx: 1 Replace the tape cartridge and retest. 2 Check and/or replace the signal cable and retest. 3 Replace the tape drive and retest. 4 Replace the system board and retest.
1901-xx	Tape servo write failed	
1902-xx	Tape format failed	
1903-xx	Tape drive sensor test failed	
1904-xx	Tape BOT/EOT test failed	
1905-xx	Tape read test failed	
1906-xx	Tape write/read/compare failed	

Pointing device interface error codes		
Error Code	**Description**	**Recommended Action**
8601-xx	Pointing Device Interface test failed	1. Replace with a working pointing device and retest. 2. Replace the system board and retest.

Audio error codes		
Error Code	**Description**	**Recommended Action**
3206-xx	Audio System Internal Error	Replace the system board and retest.

CD or DVD error codes		
Error Code	**Description**	**Recommended Action**
3301-xx **3305-xx** **66XX-xx**	CD or DVD drive read test failed	The following steps apply to error codes 3301-xx through 3305-xx and 66XX-xx: 1 Replace the CD or DVD disk and retest.* 2 Check the jumper settings on the CD or DVD drive. 3 Check and/or replace the power and signal cables and retest. 4 Replace the CD or DVD drive and retest. 5 Replace the backplane.

**** Boot to DOS (Command Prompt only) or Windows (Not Safe Mode). Press the CD or DVD drive eject button (located on the front bezel) to eject the CD or DVD and retest.***

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Diagnostic Error Codes (continued)

Video error codes		
Error Code	**Description**	**Recommended Action**
2402-xx	Video memory test failed	The following steps apply to error codes 2402-xx through 2456-xx: 1 Run Setup. 2 Replace the system board and retest.
2403-xx	Video attribute test failed	
2404-xx	Video character set test failed	
2405-xx	Video 80 × 25 mode 9 × 14 character cell test failed	
2406-xx	Video 80 × 25 mode 8 × 8 character cell test failed	
2407-xx	Video 40 × 25 mode test failed	
2408-xx	Video 320 × 200 mode color set 0 test failed	
2409-xx	Video 320 × 200 mode color set 1 test failed	
2410-xx	Video 640 × 200 mode test failed	
2411-xx	Video screen memory page test failed	
2412-xx	Video gray scale test failed	
2414-xx	Video white screen test failed	
2416-xx	Video noise pattern test failed	
2418-xx	ECG/VGC memory test failed	
2419-xx	ECG/VGC ROM checksum test failed	
2420-xx	ECG/VGC attribute test failed	
2421-xx	ECG/VGC 640 × 200 graphics mode test failed	
2422-xx	ECG/VGC 640 × 350 16-color set test failed	
2423-xx	ECG/VGC 640 × 350 64-color set test failed	
2424-xx	ECG/VGC monochrome text mode test failed	
2425-xx	640 × 480 graphics test failure	
2431-xx	640 × 480 graphics test failure	
2432-xx	320 × 200 graphics (256-color mode) test failed	
2448-xx	Advanced VGA Controller test failed	
2451-xx	132-column Advance VGA test failed	
2456-xx	Advanced VGA 256-Color test failed	
2468-xx	Advanced VGA BitBLT test	The following steps apply to error codes 2468-xx through 2480-xx: 1 Run Setup. 2 Replace the system board and retest.
2477-xx	Advanced VGA datapath test	
2478-xx	Advanced VGA BitBLT test	
2480-xx	Advanced VGA Linedraw test	

Processor error codes		
Error code	**Description**	**Recommended action**
101-xx	CPU test failed	Replace the system board and retest.
102-xx	Processor error	1. Run Setup and retest. 2. Replace the processor and retest.
103-xx	DMA controller failed	The following step applies to error codes 103-xx through 106-xx:
104-xx	Interrupt controller failed	Replace the system board and retest.
105-xx	Port error	
106-xx	Keyboard controller self-test failed	
107-xx	CMOS RAM test failed	The following steps apply to error codes 107-xx through 109-xx:
108-xx	CMOS interrupt test failed	1. Replace the battery/clock module and retest. 2. Replace the system board and retest.
109-xx	CMOS clock test failed	
110-xx	Programmable timer test failed	The following step applies to error codes 110-xx through 113-xx:
111-xx	Refresh detect test failed	Replace the system board and retest.
112-xx	Speed test failed	
113-01	Protected mode test failed	
114-xx	Speaker test failed	1. Verify the speaker connection. 2. Replace the system board and retest.
199-xx	Installed devices test failed	1. Check system configuration. 2. Verify cable connections. 3. Check switch settings. 4. Run Compaq Utilities. 5. Replace the system board and retest.

Monitor (VGA) error codes		
Error Code	**Description**	**Recommended Action**
501-xx	Video controller test failed	The following step applies to error codes 501-xx through 516-xx: Replace the system board and retest.
502-xx	Video memory test failed	
503-xx	Video attribute test failed	
504-xx	Video character set test failed	
505-xx	Video 80 × 25 mode 9 × 14 character cell test failed	
506-xx	Video 80 × 25 mode 9 × 14 character cell test failed	
507-xx	Video 40 × 25 mode test failed	
508-xx	Video 320 × 200 mode color set 0 test failed	
509-xx	Video 320 × 200 mode color set 1 test failed	
510-xx	Video 640 × 200 mode test failed	
511-xx	Video screen memory page test failed	
512-xx	Video gray scale test failed	
514-xx	Video white screen test failed	
516-xx	Video noise pattern test failed	

Clearing CMOS
Power-On Self Test (POST)
Configuration
Diagnostic error codes
Troubleshooting without diagnostics

TROUBLESHOOTING

Troubleshooting Without Diagnostics

This section describes some simple, preliminary tests and guidelines for troubleshooting the computer.

Checklist For Solving Minor Problems

If you encounter some minor problem with the computer or software application, go through the following checklist for possible solutions before running any of the diagnostic utilities:

- Is the computer connected to a working power outlet?
- Is the computer turned on and the power light illuminated?
- Are all cables connected properly and seated?
- Are all of the necessary device drivers installed?
- Is the *CONFIG.SYS* file correct?
- Is the *AUTOEXEC.BAT* file (MS-DOS) or *STARTUP.CMD* file correct?
- Was a nonbootable diskette loaded in the diskette drive at power-up?
- Are all switch settings correct?
- Was Computer Setup run after installing options (memory, disk drives, etc.) and before installing industry standard architecture boards?

Quick checks and possible solutions for problems related to these topics:

CD drive	hard drive	VGA monitor
diskette drive	hardware installation	
DVD drive	power	
flat-panel monitor (on select models only)	USB ports	

are provided in the tables below. The procedure for resolving hardware conflicts is also described.

Flat-panel monitor

Problem	Probable cause(s)	Possible solution
Screen is blank.	Your computer may not support flat-panel monitors.	See your authorized dealer or reseller about CPU support for the Digital Video Interface (DVI) needed.
Cannot find video connector on rear of CPU for flat-panel monitor.	Your computer may not have a digital flat-panel port (DFPP).	See your authorized dealer or reseller about CPU support for flat-panel monitors.
The display only fills part of the screen.	The monitor does not support your resolution setting.	FP400 and FP500 Series flat-panel monitors only support 1024 x 768 resolution mode. Change your resolution setting in the **Display** dialog box: **1** Click on **Start** **2** Point at **Settings** and click on **Control Panel** **3** Double-click on **Display** **4** Click on the **Setting** tab, and move the sliding pointer to give 1024 x 768 pixel resolution.
Green power light is flashing.	Your flat-panel monitor does not support the video resolution or refresh rate.	FP400 and FP500 Series flat-panel monitors only support 1024 x 768 resolution mode. Connect a VGA monitor temporarily and change your resolution setting in the **Display** dialog box: **1** Click on **Start** **2** Point at **Settings** and click on **Control Panel** **3** Double-click on **Display** **4** Click on the **Setting** tab, and move the sliding pointer to give 1024 x 768 pixel resolution.

CD drive

Problem	Probable cause(s)	Possible solution
Cannot read compact disc.	CD is not properly seated in the drive.	Eject the CD, then re-insert it, pressing down gently on the CD to correctly seat it in the drive.
	CD has been loaded upside down.	Eject the CD, turn it over, then reload.
	CD may be dirty or scratched.	Clean the CD or load another CD.
Cannot eject compact disc (tray-load only).	CD is not properly seated in the drive.	Turn off the computer, insert a straightened paper clip into the emergency eject hole, then push firmly. Slowly pull the tray out from the drive until the tray is fully extended, then remove the CD.
CD drive devices are not detected.	Power cycle delay.	After turning the computer off, wait 30 seconds before turning the computer on again.
	CD drive is not connected properly.	Open the computer and check to see that the drive cable is connected properly.
	Proper driver is not loaded	Restart the system and make sure the CD drive drivers are loaded.

DVD drive

Problem	Probable cause(s)	Possible solution
Cannot read DVD disk	DVD or CD is not properly seated in the drive.	Eject the DVD or CD, press down on the DVD or CD firmly to correctly seat it in the drive, then reload.
	DVD or CD has been loaded upside down.	Eject the disk, turn it over, then reload.
	DVD or CD disk may be dirty or scratched.	Load another DVD disk.
DVD does not work in the DOS mode.	Proper drivers are not loaded.	Restart the system and make sure the DVD drive drivers are loaded.
Cannot eject DVD disk.	The system is in the Sleep mode.	Press the Power button to bring the system back to full power, then eject the DVD.
	The DVD, diskette, or hard drive was active when attempting to eject the DVD.	Wait until all drive activity ends (the CD/hard drive light and diskette drive light will go out), then try to eject the DVD.
	DVD disk is not properly seated in the drive.	Turn off the computer, insert a straightened paper clip into the emergency eject hole, then push firmly. Slowly pull the tray out from the drive until the tray is fully extended, then remove the DVD disk.
DVD drive devices are not detected.	DVD drive is not connected properly.	Open the computer and check to see that the drive cable is connected properly.
	Incorrect driver is installed.	Ensure the correct driver is installed in *CONFIG.SYS*.
	Drive has been changed.	Make sure the jumper setting is set for "Slave."
	Proper drivers are not loaded.	Restart the system and make sure the DVD drive drivers are loaded.

Resolving Hardware Conflicts

Hardware conflicts occur when two or more peripheral devices attempt to use the same hardware resources. I/O addresses, interrupts, and DMA channels are the most common hardware resources used by peripheral devices. For example, the factory default settings for the MIDI port audio interface are:

Base I/O address	220H
MIDI Port Base I/O address	330H
Interrupt	IRQ 5
8-bit DMA	Channel 1

When different peripheral devices use the same hardware resources at the same time, the devices and/or the system may not function properly. You can resolve hardware conflicts by ensuring that no devices are configured to use the same hardware resources. These resources can either be dipswitch or jumper settings on the peripheral card or software configurable resources. The Computer Setup selection of your Compaq Utilities allows you to view and modify the settings for the peripheral devices factory installed in your system. Refer to the *User's Guide* for the particular peripheral cards you wish to install for information on how to view and select their settings.

To resolve hardware conflicts:

1. Change the hardware settings of your audio card or other peripheral card in your system if the peripheral card is using any settings used by the factory-installed devices.
2. If you are unsure of the settings of the peripheral cards, you can isolate the source of the problem by temporarily removing all cards not manufactured by Compaq, or resetting the default settings and running Compaq Utilities. After that, add the cards back one at a time until the card that is causing the conflict is found.

Also see: System

TROUBLESHOOTING

Troubleshooting Without Diagnostics (continued)

Hard drive

Problem	Probable cause(s)	Possible solution
Hard drive error occurs.	Hard disk has bad sectors or has failed.	Run *Computer Setup*. Reformat the hard disk.
Drive not found.	Cable could be loose.	Check cable connections.
Disk transaction problem.	Either the directory structure is bad or there is a problem with a file.	From the desktop click on the **Start** menu, Choose *Program* ➔ *Accessories* ➔ *System Tools* ➔ *Scandisk* to check for problems. If problems exist, run Scandisk and checkmark the "Automatically fix errors" box at the bottom to correct the problems. If a large number of lost allocation units is found, click on the **Start** menu. Choose *Program* ➔ *Accessories* ➔ *System Tools* ➔ *Disk Defragmenter*.
Nonsystem disk message.	The system is trying to start from a diskette that is not bootable.	Remove the diskette from the diskette drive.
	The system is trying to start from the hard drive but the hard disk has been damaged.	Insert a bootable diskette into the diskette drive and restart the computer with **Ctrl+Alt+Del**.
	Diskette boot has been disabled in Computer Setup.	Run *Computer Setup* and enable diskette boot.
Hard drive operation seems slow **OR** **Hard drive activity light is not on, or stays on without blinking.**	The hard disk files may be fragmented.	From the desktop click on the **Start** menu, Choose *Program* ➔ *Accessories* ➔ *System Tools* ➔ *Scandisk* to check for problems. If problems exist, run Scandisk and checkmark the "Automatically fix errors" box at the bottom to correct the problems. If a large number of lost allocation units is found, click on the **Start** menu. Choose *Program* ➔ *Accessories* ➔ *System Tools* ➔ *Disk Defragmenter*.

Hardware installation

Problem	Probable cause(s)	Possible solutions
A new device is not recognized as part of the computer system.	When the system advised you of changes to the configuration, you did not save the changes.	Reboot the computer and follow the instructions for saving the changes.
	The system may not have automatically recognized the new device.	Run *Computer Setup* and identify the new device.
	The cables for the new external device are loose, or the power cables are unplugged.	Check all cables.
	The power switch for the new external device is not turned on.	Turn off the computer, turn on the external device, and then turn on the computer to integrate the new device with the computer.

Power

Problem	Possible Solution
Computer will not turn on.	Ensure that the computer is connected to a power source.
Computer does not automatically display the date and time.	The real-time clock (RTC) battery may need to be replaced. Click here for replacement procedures.
Computer does not beep during POST.	The speaker volume may have been turned down. Select the **Volume** option from the Control Panel and adjust the volume.
Computer powered off automatically.	The unit temperature may have been exceeded. Check the fan for function and blockage.

USB

Problem	Probable cause(s)	Possible solution
USB device does not work with the system.	The USB device and the system may use different USB architectures.	Ensure that the USB device and the system share the same USB architecture. (UHCI-compliant devices will only work with a UHCI-compliant system, and OHCI-compliant devices will only work with a OHCI-compliant system).

Diskette Drive

Problem	Probable cause(s)	Possible solution
Diskette drive light stays on.	Diskette may be damaged.	From the desktop click on the **Start** menu. Choose **Program** ➔ **Accessories** ➔ **System Tools** ➔ **Scandisk** to check for problems.
	Diskette may be installed incorrectly.	Remove the diskette and reinsert.
	Software program may be damaged.	Check the program diskettes.
Diskette drive cannot write to a diskette.	Diskette is not formatted.	Format the diskette.
	Diskette is write-protected.	Either use another diskette that is not write-protected or disable the write protection on the diskette.
	Writing to the wrong drive.	Check the drive letter in your path statement.
	Not enough space is left on the diskette.	Use another diskette to write the information.
Diskette drive cannot read a diskette.	Diskette is not formatted.	Format the diskette.
	Using the wrong diskette type for the drive type.	Use a diskette that is compatible with the drive.
	Reading the wrong drive.	Check the drive letter in your path statement.
	Diskette drive has been disabled by *Computer Setup*.	Run *Computer Setup* and enable the diskette drive.

SuperDisk Drive

Problem	Probable cause(s)	Possible solution
SuperDisk drive light stays on.	Diskette may be damaged.	From the desktop click on the **Start** menu. Choose **Program** ➔ **Accessories** ➔ **System Tools** ➔ **Scandisk** to check for problems.
	Diskette may be installed incorrectly.	Remove the diskette and reinsert.
	Software program may be damaged.	Check the program diskettes.
SuperDisk drive cannot write to a diskette.	Diskette is not formatted.	Format the diskette.
	Diskette is write-protected.	Either use another diskette that is not write-protected or disable the write protection on the diskette.
	Writing to the wrong drive.	Check the drive letter in your path statement.
	Not enough space is left on the diskette.	Use another diskette to write the information.
SuperDisk drive cannot read a diskette.	Diskette is not formatted.	Format the diskette.
	Using the wrong diskette type for the drive type.	Use a diskette that is compatible with the drive.
	Reading the wrong drive.	Check the drive letter in your path statement.
	Diskette drive has been disabled by *Computer Setup*.	Run *Computer Setup* and enable the diskette drive.

VGA Monitor

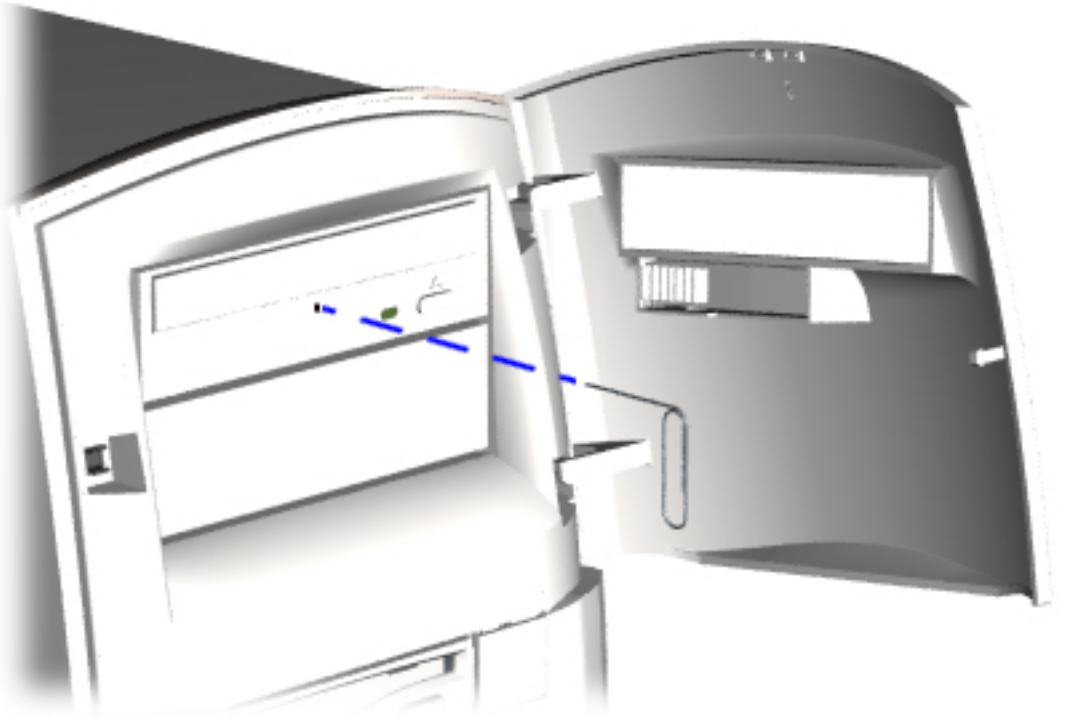
Problem	Probable cause(s)	Possible solution
Characters are dim.	The brightness control is not set properly.	Adjust the brightness control.
Screen is blank.	A screen-blanking utility could be installed.	Press any key. If the display reappears, you have a screen-blanking utility installed.
	The brightness needs adjusting.	Adjust the brightness control.
	Screen save has been initiated.	Press any key or move the mouse to light the screen.
Garbled characters on the screen are mixed with text.	The ANSI.SYS driver is not in the *CONFIG.SYS* file.	Add the ANSI.SYS driver to the *CONFIG.SYS* file by adding the following line: DEVICE = C:\ANSI.SYS
Monitor overheats.	There is not enough ventilation space for proper airflow.	Leave at least 3 inches (7.6 cm) of ventilation space. Also, be sure there is nothing on top of the monitor to obstruct air flow.
Cursor will not move using the arrow keys on the numeric keypad.	The **Num Lock** key is on.	Press the **Num Lock** key. The **Num Lock** light should not be on when you want to use the arrow keys.
	There is a possible application error.	Restart the computer.

ILLUSTRATED PARTS CATALOG - INDEX PAGE

NOTE:	The computer serial number should be provided to Compaq whenever requesting information or ordering spare parts.

System unit
Mass storage devices
Cables
Standard board
Fax/modem
Keyboards
Monitors
Miscellaneous parts
Return kits
Documentation & software

MSG index | Product Description | Troubleshooting | Illustrated Parts Catalog
Home | Removal & Replacement | Jumper & Switch Information | Specifications



REMOVAL & REPLACEMENT

Mass Storage Devices

Removing a Jammed CD, DVD or SuperDisk (available on select models only and not pictured here) From the Drive

Insert a straightened paper clip into the manual eject hole and push firmly. On select models the eject hole is located next to the eject button.

Note: The manual eject hole for the SuperDisk is located in the button cover of the manual eject button.

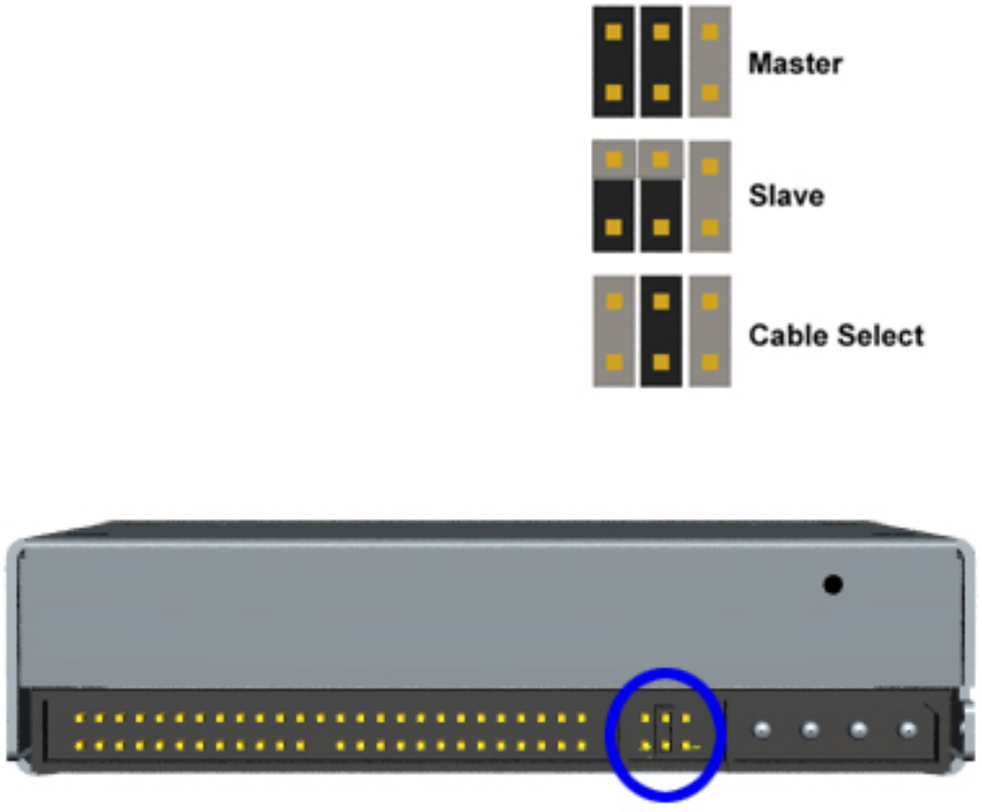
System boards
Hard drives
DVD drive
CD drive
Zip drive

JUMPER & SWITCH INFORMATION

3.5" Hard Drives

Compaq Computer Corporation uses IDE hard disk drives that conform to two different device 0/device 1 implementations. These are Conner mode and ATA-compatible mode. These two modes are incompatible with one another.

Seagate jumper settings are shown below. This link is for **5.25"** hard drive jumper settings

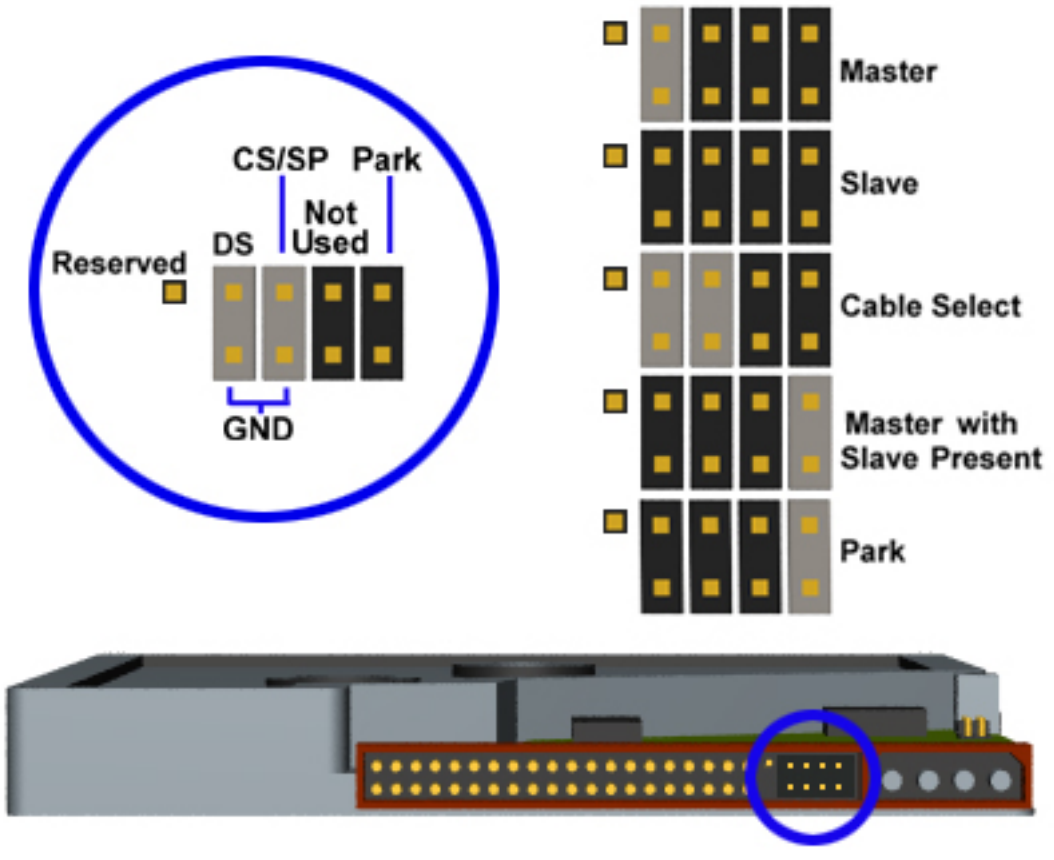


3.5" Hard Drive Jumper Settings

System boards
Hard drives
DVD drive
CD drive
Zip drive

JUMPER & SWITCH INFORMATION

5.25" Hard Drive

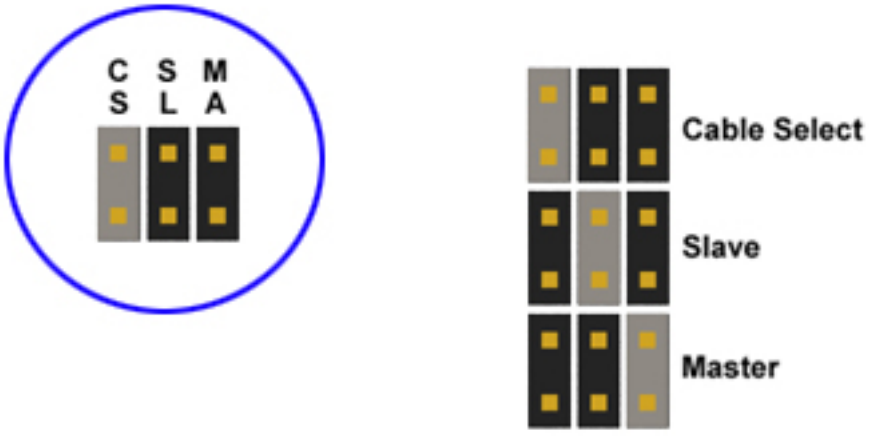


5.25" Hard Drive Jumper Settings

System boards
Hard drives
DVD drive
CD drive
Zip drive

JUMPER & SWITCH INFORMATION

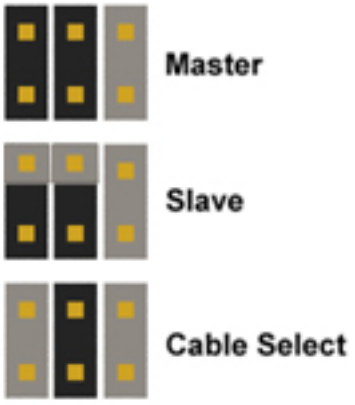
DVD Drive



System boards
Hard drives
DVD drive
CD drive
Zip drive

JUMPER & SWITCH INFORMATION

CD Drive



System boards
Hard drives
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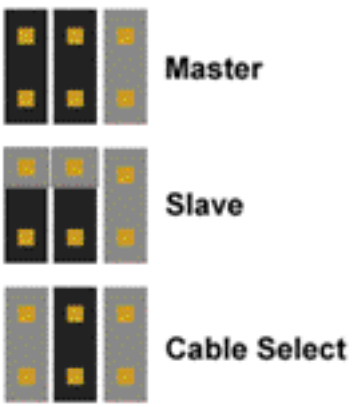
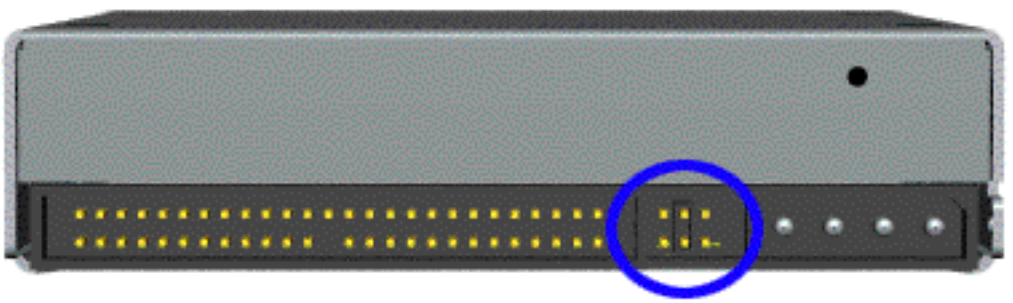
CD drive
Zip drive

JUMPER & SWITCH INFORMATION

Zip drive





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Home | Removal & Replacement | Jumper & Switch Information | Specifications

SPECIFICATIONS - INDEX PAGE

This section provides physical, environmental, and performance specifications for Compaq 5400 Series Personal Computers.

System
Power supply
Diskette drive
Hard drive
DVD drive
CD drive
Mouse
Fax-modem
Zip drive

SPECIFICATIONS

System Specifications

General system specifications
Video memory
System interrupts
System I/O (system function - shipping configuration)
System memory
System DMA

General System Specifications

	U. S.	Outside U. S.
Dimensions		
Height	16.55 in	420.37 mm
Depth	17.30 in	439.32 mm
Width	8.76 in	222.50 mm
Weight	25.3 lbs.	11.5 kg
Shipping Weight	36.6 lbs	16.4 kg
Input Requirements		
Voltage Range	100 to 120	210 to 240
AC Frequency	50 or 60 Hz	50 or 60 Hz
Fluctuations	5v +/-5%	3.3v +/-3%
Power (watts)		
Steady State	145	145
Sleep Mode	< 30	< 30

Environmental Requirements

Temperature		
Operating	50° to 95° F	10° to 35° C
Shipping	-22° to 140° F	-30° to 60° C
Humidity (noncondensing)		
Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum Altitude (unpressurized)		
Operating	10,000 ft	3048 m
Nonoperating	30,000 ft	9144 m

**This number will increase if more bays/slots are occupied.*

ATI 3-D RagePro Video Memory

Resolution	Colors	Vertical Refresh (Hz)
640 × 480	256	60 and 75
640 × 480	65K (high color)	60 and 75
640 × 480	16M (true color)	60
800 × 600	256	60 and 75
800 × 600	65K (high color, default)	60 and 75
800 × 600	16M (true color)	60 and 75
1024 × 768	256	60 and 75
1024 × 768	65K (high color)	60 and 75
1024 × 768	16M (true color)*	60 and 75
1280 × 1024	256	60
1280 × 1024	65K (high color)*	60
1280 × 1024	16M (true color)*	60

**With 4-MB video memory only*

System Interrupts

Hardware IRQ	System Function
IRQ 0	Refresh Timer
IRQ 1	Keyboard
IRQ 2	Interrupt Controller Cascade
IRQ 3	Controllerless modem (COM 2) shared data/fax
IRQ 4	Serial Port A (COM 1)
IRQ 5	Entertainment Audio*^
IRQ 6	Diskette Drive
IRQ 7	Parallel Port (LPT 1)*
IRQ 8	Real-Time Clock
IRQ 9	Available
IRQ 10	ISDN Modem if present*
IRQ 11	PCI Bus shared with Video, USB, DVD
IRQ 12	Mouse
IRQ 13	Numeric Coprocessor
IRQ 14	Disk Drive (Primary IDE)
IRQ 15	Disk Drive (Secondary IDE)

^Audio must use this setting for game compatibility. Used for audio, MPU-401, and volume control.
**Default configuration; other configurations are as follows:*
Modem - IRQ 4, 10, 11, none
Parallel Port - IRQ 3, 4, 5, 9, 10, none
System Audio - IRQ 7, 9, 10, none
Serial Port - IRQ 3, 5, 7, 9, 10, 12, none

Power supply
Diskette drive
Hard drives
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Fax/modem
Zip drive
System

SPECIFICATIONS

System Specifications (continued)

General system specifications
Video memory
System interrupts
System I-O
System memory
System DMA

System I/O

Low and High I/O Addresses (Hex)	System Function (Shipping Configuration)
0000 - 000F	DMA Controller # 1
0010 - 001F	DMA controller aliases
0020	Interrupt Controller # 1 Control Register
0021	Interrupt Controller #1 Mask Register
0022 - 003D	Interrupt Controller Aliases
040 - 0043	Counter/Timer
0044 - 004F	Unused
0050-0053	Counter/Timer Aliases
0053-005F	Unused
0060	Keyboard Controller Data Register
0061	Port B: SERR/IOCHK NMI, Speaker, Refresh
0062 - 0063	Unused
0064	Keyboard Controller Command/Status Register
0065 - 006F	Unused
0070	NMI mask register (bit 7)
0070	RTC/Configuration Memory Index Port (bit 6:0)
0071	RTC/Configuration Memory Data Port
0072	RTC Extended Index
0073	RTC Extended Data
0074-007F	Unused
0080 - 008F	DMA Page Registers
0090 - 0091	Unused (alias of DMA page registers if PIIX4.4C.7=0)
0092	Port 92 (fast reset and A20 gate)
0093 - 009F	Unused (alias of DMA page registers if PIIX4.4C.7=0)
00A0	Interrupt Controller # 2 Control Register
00A1	Interrupt Controller # 2 Mask Register
00A2 - 00B1	Unused
00B2	APM Control
00B3	APM Status
00B4-00BF	Unused
00C0 - 00DF	DMA Controller # 2
00E0	ESS Index Register
00E1	ESS Data Register
00E2 - 00E3	DDC2 Registers
00E4 - 00E5	Master I2C Interface
00E6	TV/MPEG Configuration Register
00E7 - 00E9	Unused
00EA	Ultra I/O Index Register
00EB	Ultra I/O Data Register
00EC- 00EF	Modem Configuration
00F0 - 00F1	Coprocessor Busy Clear/Reset
00F2 - 00F8	Unused
00F9	Lock Configuration Register (Dummy Write)
00FA	Unused
00FB	Unlock Configuration Register (Dummy Write)
00FC	TV/MPEG Configuration Register to remap base I/O address and interrupt resource
00FD-00FF	Unused
0100 - 0101	Unused
0102	Video: POS. 102 Register
0103-012F	Unused
0130-0131	BGI Index/Data for second line modem See 260 for controllerless modems.
0132 - 016F	Unused
0170 - 0177	Secondary IDE Controller (CD Drive)
0178 - 01EF	Unused
01F0 - 01F7	Primary IDE Controller (Hard Drive)
01F8 - 0200	Unused
0201	Joystick Port
0202 - 021F	Unused
0220 - 022F	Audio Controller
0230 - 025F	Unused
0260 - 0263	Reserved - Modem use during POST
0264 - 0277	Unused
0278 - 027F	Reserved - Parallel Port (LPT 2)
0280 - 02E7	Unused
02E8 - 02EF	Reserved - Serial Port (COM 4)
02F0 - 02F7	Unused
02F8 - 02FF	Fax/Modem (COM 2)
0330 - 0331	MPU-401
0332 - 036F	Unused
0370 - 0377	Reserved - Diskette Drive Controller 2
0378 - 037F	Parallel Port
0380 - 0387	Unused
0388 - 038B	Audio FM Synthesizer
038C - 03B3	Unused
03B4 - 03B5	Video: Monochrome
03B6 - 03B9	Unused
03BA	Video: Monochrome
03BB	Unused
03BC -03BF	Reserved - Parallel Port
03C0 -03CF	Video: VGA Registers
03D0 - 03D3	Unused
03D4 - 03D5	Video: Color
03D6 - 03D9	Unused
03DA	Video: Color
03DB - 03E7	Unused
03E8 - 03EF	Reserved - Serial Port (COM 3)
03F0 - 03F7	Diskette Controller (Primary)
03F6 - 03F7	IDE Interface (Fixed disk and CD or DVD Drive)
03F8 - 03FF	Serial Port (COM 1)
0400 - 04EF	Unused
04D0	Interrupt Controller #1 Edge/Level Control
04D1	Interrupt Controller #2 Edge/Level Control
04D2 - 0677	Unused
0678 - 067A	Parallel Port ECP Mode
0778 - 077A	Parallel Port ECP Mode
0CF8	PCI Configuration Index (32-bit I/O only)
0CFC	PCI Configuration Data
46E8	Video: Adapter Sleep

SPECIFICATIONS

System Specifications (continued)

General system specifications
Video memory
System interrupts
System I-O
System memory
System DMA

System Memory

Size	Low and High Memory Addresses	System Function
640 K	00000000 - 0009FFFF	Base Memory
128 K	000A0000 - 000BFFFF	Video RAM
32 K	000C0000 - 000C7FFF	Video ROM
32 K	000C8000 - 000CFFFF	Unused
64 K	000D000 - 000DFFFF	Unused
48 K	000E0000 - 000EBFFF	Unused (Not available for option cards. May use for UMBs.)
16 K	000EC000 - 000EFFFF	16-bit cacheable, shadowable, read-only memory. Not available for option cards.
64 K	000F0000 - 000FFFFF	System BIOS ROM shadow image
15 M	00100000 - 00FFFFFF	Standard Extended Memory
64 M	01000000 - 04FFFFFF	Rest of Extended Memory
60 M	05000000 - 07FFFFFF	Unused
512 K	08000000 - 0807FFFF	Standard Direct Video Memory
512 K	08080000 - 080FFFFF	Optional Direct Video Memory
1919 M	08100000 - 7FFFFFFF	Unused
16 M	80000000 - 80FFFFFF	Memory mapped I/O devices
~2000 M	81000000 - FDFDFFFF	Unused/System ROM aliases
128 K	FDFE0000 - FDFFFFFF	System ROM (alias)
~32 M	FE000000 - FFFDFFFF	Unused
128 K	FFFE0000 - FFFFFFFF	System BIOS ROM

System DMA

Hardware	System Function (Default)	Alternate Mappings
DMA 0	ECP Parallel	1, 2, none
DMA 1	Entertainment Audio	0, 3, none
DMA 2	Diskette Drive	none
DMA 3	Entertainment Audio	0, 1, none
DMA 4	Internally used for cascading	
DMA 5	Available	
DMA 6	Available	
DMA 7	Available	

System

Power supply

Diskette drive

Hard drives

DVD drive

CD drives

Mouse

Fax/modem

Zip drive

SPECIFICATIONS

Zip Drive

Total formatted capacity (bytes)	100,663,296
Sector size (bytes)	512
Total number of sectors	196,608
Number of reassignable spare sectors	252
Seek times (including settling), ms:	
Average	29
Track-to-track	5
Maximum	55
Average latency, ms	10
Motor speed, rpm	2941±5%
Motor start time, ms	3000
Track density, tpi	2118
Track width, µm	12
Transfer rate, kb/s:	
From diskette	790-1400 kb/sec
Buffer (maximum)	3.3 MB/sec

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Fax-modem

	Conexant HCF V.90 56K Data Fax PCI Modem	Supra Express 56i PRO
Maximum Data Speed (kbps)	56*	56*
Data	V.90, K56Flex, V.34, V.32terbo, V.32bis, V.32, V.22bis, V.22, V.21, Bell 212A, Bell 103	V.90, K56Flex, V.34, V.32terbo, V.32bis, V.32, V23, V.22bis, V.22, V.21, Bell 212A, Bell 103
Error Correction	V.42bis,V.42, LAPM, and MNP 2-5	V.42, LAPM, and MNP 2-4
Fax	V.17 (14.4 kbps transmission speed) V.29, V.27ter, V.21 Channel 2, Class 1 command set, Group III FAX	V.17 (14.4 kbps transmission speed) V.29, V.27ter, V.21 Channel 2, Group III FAX, Class 1 interface

* Both K56flex and V.90 are designed only to allow faster downloads from either K56flex or V.90 compliant digital sources. Maximum achievable download transmission rates are currently unknown, may not reach 56kbps, and will vary with line conditions.

** The G.Lite DSL protocol is designed to allow faster downloads from G.Lite DSL-compliant digital sources. Maximum achievable download transmission rates are currently unknown, may not reach 1.5Mbps, and will vary with line conditions and distance from the telephone company central office.

System
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Mouse		
Dimensions	*U. S.*	*Metric*
Height	1.22 in	3.1 cm
Length	3.94 in	10 cm
Width	2.21 in	5.6 cm
Weight	2.9 oz	85 g
Base Resolution	400 DPI	
Tracking Speed (maximum)	10 in/sec	25 cm/sec
Temperature		
Operating	32° F to 104° F	0° C to 40° C
Storage	-4° F to 140° F	-20° C to 60° C
Lifetime		
Mechanical	Exceeds 300 miles	Exceeds 483 km
Switch	Exceeds 1 million operations	Exceeds 1 million operations
Relative Humidity	10% to 90%, noncondensing	
ESD	No soft errors through 6 kV; No hard errors through 6 kV; specific performance depends on host system	

SPECIFICATIONS

CD Drives (including CD-RW)

	32× CD Drive	
Dimensions	**U. S.**	**Metric**
Width	5.75 in	150.1 mm (maximum)
Height	1.67 in	42.9 mm (maximum)
Depth	8.23 in	208.0 mm (maximum)
Weight	2.65 lb	1200 grams
Applicable Disc		
CD-ROM	Modes 1 and 2	
CD-DA	Audio	
CD-R/W		
CD-XA	Mode 2, Form 1 and 2	
Photo CD	Single and Multiple Session	
Block Size		
CD-ROM Mode 1	2048 bytes	
CD-ROM Mode 2	2340, 2336 bytes	
CD-DA	2352 bytes	
CD-XA	2328 bytes	
Diameter	12 cm, 8 cm (drive must support 8 cm adapters)	
Thickness	1.2 mm	
Track Pitch	1.6 µm	
Laser		
Divergence Angle	53.5 degrees +/- 1.5 degrees	
Output Power	0.14 mW (@ objective lens)	
Type	Semiconductor laser GaAIAs	
Wave Length	780 nm +/- 25 nm	
Access Time		
Random	< 100 ms (typical)	
Full Stroke	< 150 ms (typical)	
Audio Output Level		
Line Out	0.7 V (RMS)	
Cache Buffer	128 KB (minimum)	
Data Transfer Rate		
Sustained	150 kB/s (IX, using audio disc) 2100 to 4800 kB/s (14X to 32X variable, w/650 MB disc)	
Bus Rate		
Burst	4.0 MB/s minimum	
Startup Time (Single)	< 7 sec (typical)	
Startup Time (Multisession)	< 30 sec (typical)	
Stop Time	< 4 sec	

	CD-RW	
Dimensions	**U. S.**	**Metric**
Width	5.75 in	150.1 mm (maximum)
Height	1.67 in	42.9 mm (maximum)
Depth	8.23 in	208.0 mm (maximum)
Weight	2.65 lb	1200 grams
Applicable Disc		
CD-ROM	Modes 1 and 2	
CD-DA	Audio	
CD-ROM XA	Mode 2, Form 1 and 2	
Photo CD	Single and Multi Session	
CD-I	Mode 2, Form 1 and 2	
CD EXTRA		
CD-R/W		
Video CD		
CD-TEXT		
Read Only Block Size		
CD-ROM Mode 1	2048 and 2352 bytes	
CD-ROM Mode 2 Form 1	2048, 2328, 2336, 2340, and 2352 bytes	
CD-ROM Mode 2 Form 2	2328, 2336, 2340, and 2352 bytes	
CD-DA	2352 and 2368 bytes	
Writeable Block Size		
CD-ROM Mode 1	2048 bytes	
CD-ROM Mode 2 Form 1	2048 and 2352 bytes	
CD-ROM Mode 2 Form 2	2352 bytes	
CD-DA	2352 and 2368 bytes	
Diameter	12 cm, 8 cm (drive must support 8 cm adapters)	
Thickness	1.2 mm	
Track Pitch	1.6 µm	
Laser		
Divergence Angle	53.5 degrees +/- 1.5 degrees	
Output Power	0.14 mW (@ objective lens)	
Type	Semiconductor laser GaAIAs	
Wave Length	780 nm +/- 25 nm	
Access Time		
Random	150 ms (typical)	
Full Stroke	350 ms (typical)	
Audio Output Level		
Line Out	0.7 V (RMS)	
Cache Buffer	1 Mbyte (minimum)	
Data Transfer Rate		
Sustained	150 kB/s (1X, read/write), 300 KB/s (2X, read/write), 600 KB/s (4X, read/write), 1200 KB/s (8X, read), Variable 1500 to 3600 KB/s (10X to 24X, read)	
Bus Rate		
Burst	4.0 MB/s minimum	
Startup Time (Single)	< 7 sec (typical)	
Startup Time (Multisession)	< 30 sec (typical)	
Stop Time	< 4 sec	

SPECIFICATIONS

DVD3, 6x/10x Drive

Dimensions	*U. S.*	*Metric*
Width	5.74 in	14.60 cm
Height	1.68 in	4.29 cm
Depth	8.23 in	20.80 cm
Weight	1.80 lb	0.9 kg

Applicable Disc Formats

DVD-5, DVD-9, DVD-10, DVD-18	Mode 1 and Mode 2
CD-ROM	Audio
CD-DA	Mode 2, Form 1 and 2
CD-XA	Single and Multiple Session
Photo CD	
CD-I Ready	
CD-Bridge	
CD-R	

Block Size

CD-ROM Mode 0	2352 bytes
CD-ROM Mode 1	2352, 2340,2336, 2048 bytes
CD-ROM Mode 2	2352,2340, 2336, 2048 bytes
DVD	2048 bytes

Center Hole	15 mm diameter
Disc Diameter	12 cm, 8 cm
Thickness	1.2 mm
Track Pitch	1.6 µm (CD-ROM); 0.74 µm (DVD)

Access Time

	DVD:	**CD:**
Random	< 180 ms typical	< 120 ms
Full Stroke	< 300 ms	< 200 ms

Audio Output Level

Line Out	1.0 V (RMS) at 47 kW
Headphone	0.7 V (RMS) at 32 W

Cache Buffer	512 Kb
Sustained Data Transfer Rate	150 KB/sec (1x CD-ROM mode) 1200-3600 KB/sec (32× CAV CD-ROM mode) 2705-8115 KB/sec (6x CAV DVD mode)
Interface Cable Length (Max)	18 in
Typical Startup Time	< 10 sec
Typical Stop Time	< 2 sec

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System

SPECIFICATIONS

Western Digital hard drives

Click link for specifications on Seagate or Quantum hard drives.

Western Digital Hard Drives - 3.5"

	8.4-GB	10.0-GB	13.0-GB
Compaq Part Number	148611-001	144364-001	144365-001
Formatted Capacity			
Physical (MB)	8455.2 MB	10005 MB	13520.1 MB
Data Transfer Rate			
Disk to Buffer (Mb/second)	87.9 - 233.57	87.9 - 233.57	87.9 - 233.57
Interface w/o IORDY	12.5	12.5	12.5
Interface w/ IORDY	16.6	16.6	16.6
UDMA	66.6	66.6	66.6
Typical Seek Time (including settling)			
Track to Track (ms)	2.0 - 5.0	2.0 - 5.0	2.0 - 5.0
Average (ms)	9.5 - 15.0	9.5 - 15.0	9.5 - 15.0
Full Stroke (ms)	19 - 23	19 - 23	19 - 23
Disk Rotational Speed (RPM)	5400 +/- 0.5 percent	5400 +/- 0.5 percent	5400 +/- 0.5 percent
Data Cylinders			
Physical	16579	16579	16579
Logical	16383	16383	16383
Data Heads/ Cylinder			
Physical	3	3	4
Logical	16	16	16
Sectors per Track			
Physical	282 - 504 (20 zones)	282 - 504 (20 zones)	282 - 504 (20 zones)
Logical	63	63	63

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SPECIFICATIONS

Seagate hard drives

Click link for specifications on Quantum or Western Digital hard drives.

Seagate Hard Drives - 3.5"

	8.4-GB	10.0-GB	13.0-GB	13.0-GB	17.0-GB
Compaq Part Number	112224-001	116193-001	143873-001	116194-001	116195-001
Formatted Capacity					
Physical (MB)	8640 MB	10005 MB	13520	13022	17245 MB
Logical (MB)	8455 MB	8455 MB	8455	13022	17245 MB
Transfer Rate					
Disk to Buffer (Mbits/sec)	105.15-222.87	188 Max.	323 Max.	171 Max.	188 Max.
Interface (Mbytes/sec)					
IORDY	16.6	16.6	16.6	16.6	16.6
DMA	16.6	16.6	16.6	16.6	16.6
UDMA	66.6	66.6	66.6	33.3	66.6
Typical Seek Time (including settling)					
Single Track (ms)	1.3 - 2.1	2.0 - 2.4	1.5 - 3.0	1.5 - 3.0	1.3 - 2.1
Average (ms)	9.0 - 10.5	10.5 - 11.5	9 - 12	9 - 12	9 - 10.5
Full Stroke (ms)	18 - 20	24 - 26	18 - 20	18 - 20	18 - 20
Disk Rotational Speed (RPM)	5400 +/- 0.1 percent	5400 +/- 0.2 percent	7200 +/- 0.2 percent	5400 +/- 0.2 percent	5400 +/- 0.2 percent
Data Cylinders					
Physical	12210 (+/-)	12561	15399	12561	12561
Logical	16383	16383	16383	16383	16383
Data Heads/ Cylinder					
Physical	3	8	4	6	8
Logical	16	16	16	16	16
Sectors per Track					
Physical	244-437 nom	244-416 (10 zones)	316-508 (10 zones)	245-421 (10 zones)	244-416 (10 zones)
Logical	63	63	63	63	63

SPECIFICATIONS

Quantum hard drives

Click links for specifications on Seagate or Western Digital hard drives.

Quantum Hard Drives - 3.5"

	8.4-GB	10.0-GB	13.0-GB
Compaq Part Number	122258-001	138224-001	138225-001
Formatted Capacity			
Physical (MB)	8640 MB	10020 MB	13020 MB
Logical (MB)	8455 MB	10020 MB	13020 MB
Data Transfer Rate			
Head (Mb/second)			
Zone 1	121.9	148.8	121.9
Zone 15	194.9	241.9	194.9
Interface (Mbytes/sec)	66	66	66
Typical Seek Time (including settling)			
Track to Track (ms)	1.5 - 2.0	1.5 - 2.0	1.5 - 2.0
Average (ms)	11 - 13	11 - 13	11 - 13
Full Stroke (ms)	18 - 22	18 - 22	18 - 22
Disk Rotational Speed (RPM)	5400	5400	5400
Data Cylinders			
Physical	12515	16383	12515
Logical	16383	16383	16384
Data Heads/ Cylinder			
Physical	4	3	6
Logical	16	16	16
Sectors per Track			
Physical	250-403 (15 zones)	307-512 (15 zones)	250-403 (15 zones)
Logical	63	63	63

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Zip drive

SPECIFICATIONS

Diskette Drive

Diskettes	
Size (in)	3.5 (8.89 cm)
High Density (MB)	1.44
Low Density (KB)	720
Light	Green
Height	One-third
Bytes per Sector	512
Sectors per Track	
High Density	18
Low Density	9
Tracks per Side	
High Density	80
Low Density	80
Read/Write Heads	2
Average Seek Time (ms)	
Track-to-Track	3
Average	94
Settling Time	15
Latency Average	100

SPECIFICATIONS

Power Supply

	U. S.	Outside U. S.
Input Specifications		
Nominal Line Voltage	100 to 120 VAC	220 to 240 VAC
Range Input Line	90 to 132 VAC	180 to 264 VAC
Frequency Range	47 to 63 Hz	47 to 63 Hz
Input Power	210 Watts	210 Watts
Input Current	4.5 at 90 VAC	2.2 at 180 VAC
Holdup Time	16 ms from zero crossing at 120 VAC	16 ms from zero crossing at 240 VAC
General Specifications		
Full Output Rating	To 122° F and 5,000 ft To 90° F and 10,000 ft (derate linearly)	To 50° C and 1524 m To 32° C and 3048 m (derate linearly)
Minimum Load	1.0 A on + 5.0 V output 0.2 A on 12 V output	1.0 A on + 5.0 V output; 0.2 A on 12 V output
Ambient Temperature Range		
Operating	50° to 122° F	10° to 50° C
Storage	-40° to 151° F	-40° to 66° C
Dielectric Voltage Withstand		
Input to Ground	1500 VAC/1 second	
Safety Standard	UL 1950; CSA 22.2 #950 or CSA 22.2 #234; TUV/VDE EN 60 950 (VDE0805/11.91); EMKO-TSE (74-SEC) 207/93	
Input Transient Susceptibility		
Common and Differential Mode (superimposed on AC line)	2500 V, 1 µs, damped sinusoidal 600 V, 10 µs pulse	
Differential Mode	20% step change in AC input voltage	

TROUBLESHOOTING - INDEX PAGE

Clearing CMOS

Power-On Self Test (POST)

Configuration

- Preparing the computer
- Setup
- Accessing Compaq utilities options

Diagnostic error codes

Troubleshooting without diagnostics

- Checklist for minor problems
- Hardware installation
- Power
- USB
- Monitor
- Diskette drive or SuperDisk drive
- Hard drive
- CD drive
- DVD drive
- Resolving hardware conflicts

Maintenance and Service Guide

Compaq Presario 5400 Series Computers - 5446, 5452, 5456, 5471, 5473, 5474, 5475, 5476, 5477

PRODUCT DESCRIPTION - INDEX PAGE

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Keyboard controls and lights

Creativity Action Center

Back components

connector pin assignments

Power cord set requirements

general requirements

country-specific requirements

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CPU controls and lights
Keyboard controls and lights
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Back CPU connectors
Power cord set requirements

PRODUCT DESCRIPTION

Power Cord Set Requirements

The power supply needs to be set to 115 Volts AC.

The power cord set (flexible cord and wall plug) received with the computer meets the requirements for use in the country where the computer was purchased.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer. For more information on power cord set requirements, contact your Compaq authorized dealer, reseller, or service provider.

General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 6.00 feet (1.8 m) and a maximum of 9.75 feet (3.0 m).
2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
3. The power cord set must have a minimum current capacity of 10A and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.
4. The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector, for mating with appliance inlet on the Switch Box.

Country-Specific Requirements

Country	Accredited Agency	Country	Accredited Agency
Australia	EANSW*	Italy	IMQ*
Austria	OVE*	Japan	JIS***
Belgium	CEBC*	Norway	NEMKO*
Canada	CSA**	Sweden	SEMKO*
Denmark	DEMKO*	Switzerland	SEV*
Finland	SETI*	United Kingdom	BSI*
France	UTE*	United States	UL**
Germany	VDE*		

* The flexible cord must be <HAR> Type HO3VV-F, 3-conductor, 1.0 mm2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

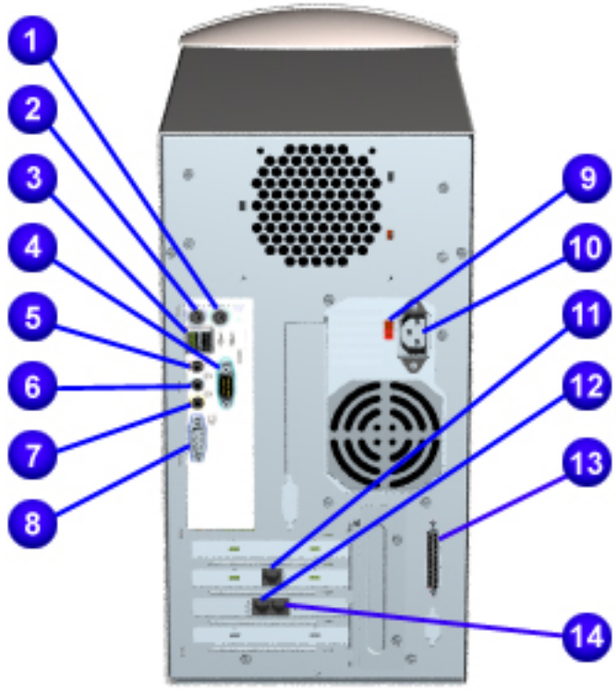
** The flexible cord must be Type SJT-2 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A, 250V) configuration.

*** The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. Flexible cord must be Type VCT or VCTF, 3-conductor, 0.75mm2 conductor size. The wall plug must be a two-pole type with a Japanese Industrial Standard C8303 (15A, 125V) configuration.

Models and features
CPU controls and lights
Keyboard controls and lights
Creativity Action Center
CPU rear connectors
Power cord set requirements

PRODUCT DESCRIPTION

Click here to jump to connector pin assignments.



CPU Back Connectors

1 Mouse

2 Keyboard

3 Two USB ports

4 Serial port

5 Microphone in

6 Audio line in

7 Audio line out

8 SVGA monitor port

9 Voltage select switch

10 AC power connector

11 Ethernet network card (select models)

12 Telephone line to wall outlet (select models)

13 Parallel Port

14 Telephone line to telephone

CAUTION: Do not plug a phone line into the network connector or you may damage the computer.

Models and features
CPU controls and lights
Keyboard controls and lights
Creativity Action Center
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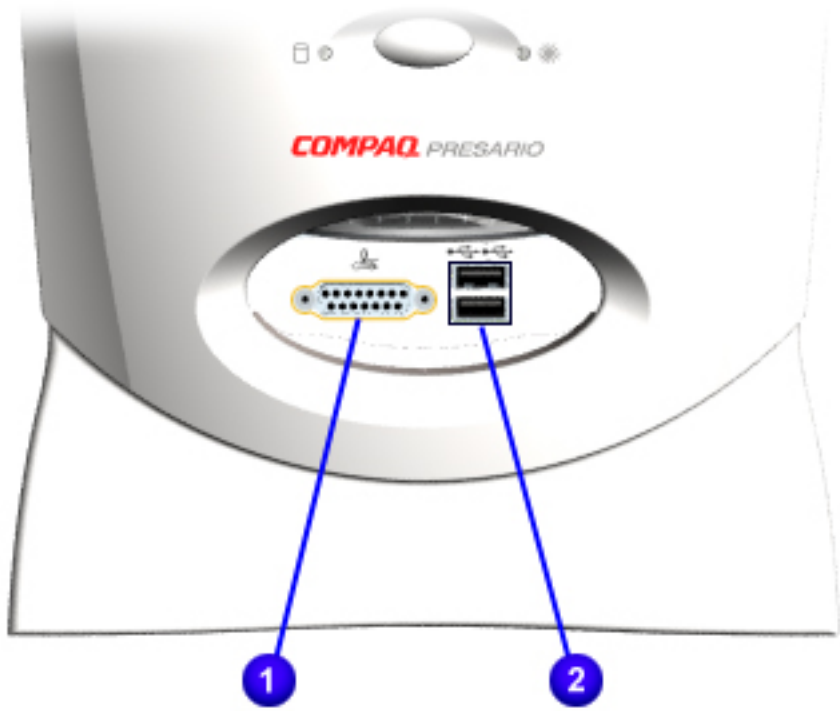
Power cord set requirements

PRODUCT DESCRIPTION

Available on select models.



Creativity Action Center

1 Gamepad/joystick port

2 Two USB ports

Models and features
CPU controls and lights
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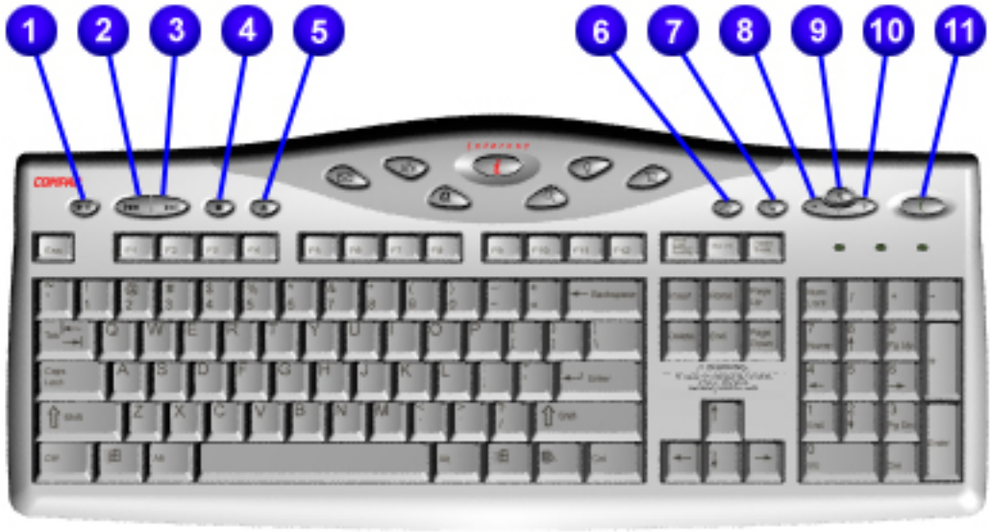
PRODUCT DESCRIPTION

Top left and right controls (click here for **keyboard top right corner** assignments)



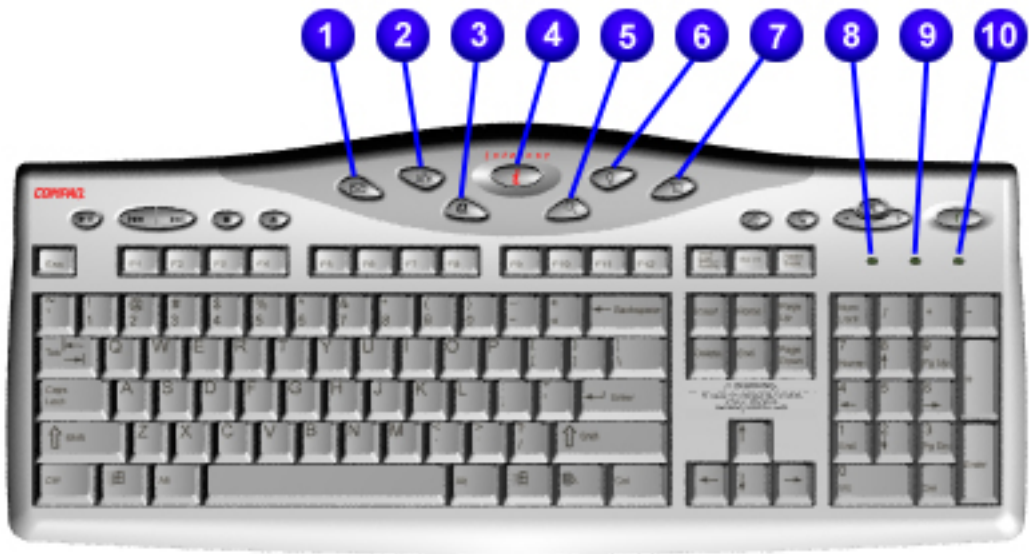
Keyboard Controls and Lights

1 Play/pause
2 Previous track
3 Next track
4 Stop
5 Load/Eject CD
6 Quick Print
7 Application launch
8 Volume down
9 Mute
10 Volume up
11 Sleep button

Models and features
CPU controls and lights
Keyboard controls and lights
Creativity Action Center
Back CPU connectors
Power cord set requirements

PRODUCT DESCRIPTION

Center controls and upper right corner lights



Keyboard Controls and Lights

1 Instant e-mail

2 Daily destination

3 My Presario

4 Instant internet

5 Instant search

6 Online Marketplace

7 Retail central

8 Num lock light

9 Caps lock light

10 Scroll lock light

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Home | Removal & Replacement | Jumper & Switch Information | Specifications

PRODUCT DESCRIPTION

Models and features
CPU controls and lights
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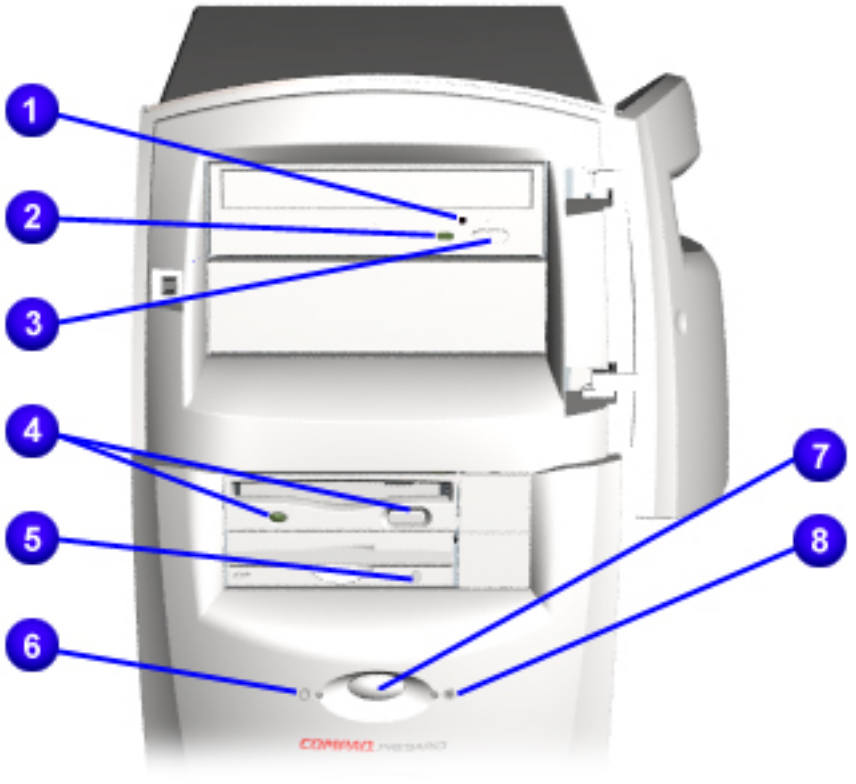

CPU Controls and Lights

1 Emergency eject slot

2 CD/DVD drive activity light (on some models this light is displayed to the left of the manual eject slot)

3 CD/DVD load/eject button

4 Floppy drive eject button

5 Zip drive eject button & activity light

6 Drive activity light

7 Instant on button

8 Power status light

Models and features
CPU controls and lights
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PRODUCT DESCRIPTION

Compaq Presario 5400 Series Standard Configurations

	Model	Processor MHz	Hard drive Size (GB)	RAM MB	CD/DVD/CD-RW	Modem
U.S., Latin America, Canada	5452	Celeron (466)	10.0	64	6X DVD	56k
	5473	Celeron (500)	17.0	96	CD-RW	56k
	5475	Celeron (500)	13.0	96	32x	56k
	5477	Celeron (500)	13.0	64	CD-RW	56k
Europe, Africa, Middle East	5446	Celeron (433)	8.0	64	6X DVD	56k
	5456	Celeron (466)	8.0	64	6X DVD	56k
	5471	Celeron (500)	8.0	64	CD-RW	56k
	5473	Celeron (500)	17.0	96	CD-RW	56k

Maintenance and Service Guide

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REMOVAL & REPLACEMENT PROCEDURES - INDEX PAGE

This section provides general service information for Compaq 5400 Series Personal Computers. Adherence to the procedures and precautions described in this section is essential for safe and proper service.

Before you begin

- Electrostatic discharge
- Service considerations
- Preparation for disassembly

Serial number

Chassis

Power supply

Mass storage devices

- 3.5" Hard drive
- 5.25" Hard drive
- CD or DVD drive
- Zip drive
- Diskette drive

Fax-modem

Parallel port assembly

PCI bracket

System board

- battery
- memory module
- processor
- I/O panel
- system board

Instant On button board

Creativity Action Center